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ABSTRACT

The study of early school leavers was the first phase of a three-year project which looked at the social processes implicated in the transition from school to work or to further education. Data for the study was obtained by mail questionnaire during the summer of 1978-79 from an Australia-wide sample of 4,919 individuals who were between seventeen years of age and seventeen and eleven months on October 1, 1978. Approximately half of the sample were in their final years of high school and the remainder were early school leavers, persons who had left high school before year 12. Study results indicated differences between states and between systems (government, Catholic, and independent) in achievement. Students from migrant families whose native language was not English were also disadvantaged when the measure was student achievement. Early school leavers were most likely to be found in government schools, in particular states, or among those who had not achieved mastery of literacy and numeracy. Relative to seeking employment, each extra year of schooling resulted in finding a job one month earlier. In addition, schooling and proficiency in basic numerical skills seem to count on the job, and are rewarded with continuous employment and higher prestige jobs. As a remedy to the problems experienced by early school leavers, recommendations were made relative to these individuals receiving further education in alternative settings. (MEK)

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ACER Research Monograph No.6

SCHOOL, WORK, AND CAREER

SEVENTEEN-YEAR-OLDS IN AUSTRALIA

Trevor Williams
Jeff Clancy
Margaret Batten
Sue Girling-Butcher

This project is funded in part by a grant
from the Education Research and Development Committee.

U.S. DEPARTMENT OF HEALTH,
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Four thousand nine hundred and nineteen Australians took the time to tell us what it was like to be 17 years old at work, at school and in between during the summer of 1978-79. They provided us with facts about youth in transition and we are more than grateful. We hope our use of these facts justifies their efforts.

This first phase of the Study of School Leavers was shaped by the advice of many of our colleagues and, in particular, that of the advisory committee: Professor David Beswick; Dr Chris Duke; Associate Professor Millicent Poole; and Mr Alf Webster. Ken Ross helped us deal with the complexities of our contingency sampling and weighting. Robert Clutterbuck advised us and designed our phase one questionnaires. Russell Hanna exercised his considerable graphic talents in the design of our 'Report to Respondents' and the phase two questionnaire.

Claire Bayley and her staff advised us and handled the large amount of clerical work involved in the survey with professional ease and efficiency. Margaret Taylor deciphered our handwritten manuscript, coped easily with changes, rewrites, equations and tables, and typed into the night on occasion to meet the unreasonable demands we made. Thank you.

INTRODUCTION

Structure of the Report

The study reported here is the first phase of a three-year project which looks at the social processes implicated in the transition from school to work or to further education. This project itself is one of six defining a research program investigating aspects of the influence of education and work on the transition of youth to adulthood. The program is funded by the Education Research and Development Committee (ERDC) and by the ACER.

In Chapter 1 we describe the origins, substance and progress of this program and discuss in detail the theoretical framework which guides and integrates our efforts. This discussion provides the context for the remainder of the report which focusses exclusively on the results from phase one of 'A Study of School Leavers'. These results are used to describe the fortunes of 5000 17-year-olds in school and at work during 1978. About half were in their final years of high school and the remainder were 'early school leavers', persons who had left high school before Year 12.

Chapter 2 describes the development of the research design for phase one of 'A Study of School Leavers'. We respond to the ERDC's concern that research reports should serve a training function by reporting the judgments, compromises, and preferences underlying this design in more detail than is usual.

Chapter 3 is a methodological chapter which discusses details of the way in which we measured the constructs of interest, considers what it is precisely that we want to know from these data, proposes a structural equation model to capture the theoretical arguments guiding the investigation and a statistical model to provide measures of effect, and discusses the assumptions and limitations entailed in each of these.

Chapter 4 describes who leaves high school early, who stays on to graduation, and why. We estimate the effects, other things equal, of sex of student, State/Territory of residence, school system attended (Government, Catholic, Independent), rural-urban location, family background, and three measures of school achievement (Literacy, Numeracy, and Word Knowledge) on retention into the final years of high school.

In Chapter 5 we concentrate on the transition from school to work, and the career beginnings of early school leavers. This is undertaken within a theoretical framework that links a variety of ascribed characteristics (State, school, family background, sex) to occupational experiences and attainments in the first years of working life, through achievement in school and the amount of schooling attained. In the interpretation of these data we take a variable-oriented approach and examine the importance of each of the ascribed and achieved characteristics on the range of occupational and educational attainments measured. Thus, we discuss 'State effects', 'school effects', 'Literacy and Numeracy effects' and so on, across the several outcome measures and arrive at conclusions about the importance of these variables in the lives of early school leavers.

In Chapter 6 the approach is issue-oriented and we attempt to summarize our findings by considering the multiple influences on each of four stages in the transition process: the decision to leave school; the transition itself; the early career; and the future.

Reading the Report

At some risk of appearing repetitious to those who may read all our words, we have provided several routes the reader might take according to his/her inclinations.

Route 1. The most basic description of the project and its findings is contained in the Summary which follows, the first part of Chapter 2 where we describe the basic theoretical model, plus Chapter 6 where we report the findings, conclusions and recommendations.

Route 2. Reading Chapter 1 in addition will place the present investigation within the context of the research program of which it is a part.

Route 3. Reading Chapters 4 and 5 as well will provide the more detailed findings summarized in Chapter 6.

Route 4. Those wanting a statement of our measurement procedures, and methodological and statistical orientations as well will find this in Chapter 3.

Route 5. Readers interested in the machinery behind the survey and its day-to-day operation will find a description in the second part of Chapter 2.

Summary

In this section we provide a brief summary of our findings and the recommendations that flow from them. Both the investigation and this report were shaped by the following considerations.

1 Terms of Reference. We undertook to address five terms of reference specified by the Education Research and Development Committee (see the first page of Chapter 1).

2 Phase One. We report findings from only the first phase of a three-year study. Data collection for phase two is nearing completion at this time.

3 Reporting Time. We hoped to inform the debate about youth in transition and saw the need to report findings quickly.

4 Ceteris Paribus. We argue that complex social processes cannot be described with simple statistics. The statistics we have used offer the interpretation of the effect of one factor upon another, other things equal. We make other things equal statistically to tease out the influence of each factor from the complex of influences that affect youth in transition (see Chapter 3).

The Theoretical Model

The investigation is cast within a framework identified by the following hypothetical patterns of influence.

1 State/Territory of residence, school system attended, school rurality, ethnicity, family rurality, family size, father's occupation, father's education, mother's education, and respondent's sex all influence achievement at school. We consider achievement in three basic skills; Word Knowledge, Literacy and Numeracy.

2 We postulate that all of these factors influence whether an individual becomes an early school leaver or not and the number of year-levels of schooling completed by early leavers.

3 We see all of these factors as influences on occupational attainments and involvement in further education of these early school leavers. Our measures are: time to find the first job; satisfaction with this job; experience of unemployment; length of unemployment; prestige of present job; and prestige of job expected five years hence.

Data

In the summer of 1978-79, data were obtained by mail questionnaire from an Australia-wide sample of 4919 individuals aged between 17 years and 17 years 11 months on 1st October 1978.

Analyses

We adopted an analytical approach known as 'structural equation modelling' to formalize and quantify our theoretical arguments. Most of our findings rest on the interpretation of partial regression coefficients. This technique is explained in simple terms and by example in Chapter 3.

Findings and Recommendations

Those findings that lead to recommendations are considered sequentially under the following headings: Influences on Achievement; Stayers and Leavers; The Transition from School to Work; The Early Career; and, The Future. Because this is a summary we are unable to present the qualifications that accompany the interpretation of each finding. We urge the reader to read Chapter 6 at least before accepting or rejecting the conclusions and recommendations we note immediately below.

Influences on Achievement. We found State/Territory differences in achievement among students otherwise comparable. Comparable students also differed according to the school system - Government, Catholic, Independent - attended. We attributed these achievement differences to between-State and between-system differences in the practice and provision of education. Since the practices and provisions of education are most amenable to policy action we recommended that attempts be made to identify the specific nature of these differences.

Students from migrant families whose mother-tongue was not English were disadvantaged in achievement, other things equal. Our analyses suggested that this was a language, rather than migrancy, effect and we recommended that remedial English programs along with bilingual teaching/counselling be introduced to compensate for this disadvantage.

Stayers and Leavers. Other things equal: some States have more early school leavers than others; there are school system differences such that students at Government schools are more likely to become early leavers; and students failing to achieve mastery of Literacy and Numeracy are more likely to leave school early. We suggest that some part of the State and school system differences may be due to differences in the quality of life students experience in their schools and we recommend that this proposition be tested with a view to policy action. We attribute the linkage between students' failure to master basic skills and their early leaving to a mismatch between the cognitive teaching mode adopted by schools and the capabilities of these students. We recommend for these students an approach relying less on abstract understanding and more on repeated practical applications.

The Transition from School to Work. These and subsequent findings are based on data obtained from early school leavers. While there are State differences and sex differences in the time it takes to find a job after leaving school, the number of year-levels completed before leaving exerts a strong influence. Each extra year of schooling results in finding a job one month earlier, on the average. Early school leavers find jobs, it seems, on the basis of merit certified by schools and accepted by employers. We note that more schooling for youth may redistribute unemployment but is unlikely to reduce it.

The Early Career. The least schooled and the least skilled among early school leavers experience the most unemployment, other things equal. Schooling and proficiency in basic numerical skills seem to count on-the-job, and are rewarded with continuous employment and higher prestige jobs. We note again that, since youth unemployment is largely a structural phenonemon, more schooling and more skills, though desirable in themselves, will serve only to redistribute unemployment. We note also that, other things equal, early leavers from Catholic schools appear to be more employable.

The Future. The main interest here was in participation by early school leavers in further education. We noted that it was the least schooled and the least skilled who were least likely to participate in further education. Given that these individuals were the group most likely to be displaced by machines and need retraining, we recommended that they be encouraged into further education by presenting it as an experience different from that of traditional schooling.

CHAPTER 1

A PROGRAM OF RESEARCH ON THE TRANSITION TO ADULTHOOD

Background

In February 1978 the Education Research and Development Committee indicated its interest in supporting research in the general area of the transition from school to work. This indication took the form of a request to the educational research community for proposals outlining the form that a study of school leavers might take. The broad aims of the study had been defined by the ERDC Priority Area Advisory Group concerned with demographic effects and social change, and took the following form.

1 To obtain information about the post-school experience of school leavers which might be seen as having implications for the structure, timing and content of secondary education.

2 To feed back into school decision making the perceptions of ex-students about the strengths and weaknesses of their school experience.

3 To identify critical points in school experience where particular types of failure or particular choices made have predictable long term effects.

4 To test the association between school attainment and length of schooling and the relationship of both to post-school options of students.

5 To examine the relationship between social background, sex, ethnic origin and geographical location on the one hand, and school and post-school achievement and options on the other.

In March 1978 we responded to this request with a proposal that linked ongoing ACER work in this area to a research design addressing the concerns of the ERDC. One of the major components of this design was the proposition that the subjects of the study should be the nationally representative samples of 10-year-old and 14-year-old students involved in the Literacy and Numeracy Study conducted by the ACER in 1975 (Keeves and Bourke, 1976; Bourke and Lewis, 1976; Bourke and Keeves, 1977). In short, we proposed to follow up the 6628 10-year-olds and 6247 14-year-olds sampled in 1975 and so build on to the existing Literacy and Numeracy Study data those data that would allow us to address the concerns expressed in the terms of reference.

A follow-up study of these two groups seemed particularly appropriate for the following reasons. First, by October 1978, the time at which we would begin data collection, members of the '14-year-old sample' would be aged 17 or 18 and be either early school leavers of one or two years standing, or in their final years of high school and facing the transition from school to work or further education. Second, the

'10-year-olds' would be 13 or 14 years of age and approaching their first major vocational decision, whether or not to leave school at the minimum age. Third, we had information already pertinent to the often-voiced concern that schools were failing to prepare students in the basic skills of reading, writing, and numeracy necessary for successful performance in the world of work. Fourth, we had available already defined samples that were representative of both State and National populations in these age cohorts. Fifth, because we could anticipate following these individuals through 1980 we were in the fortunate position of being able to study the process of school-work transition at two stages in a quasi-longitudinal study: the early antecedents, in the form of those processes leading to the formation of early vocational preferences, among the younger sample; and the transition from school to work, along with early career formation, among the older sample.

An Integrating Framework

The unifying concern of the terms of reference is with the social processes implicated in status attainment, both educational and occupational. Accordingly, we have adopted the basic arguments of status attainment models to provide a framework within which to link these terms of reference, and integrate the several investigations they suggest.

Status attainment models have their origins in the study of social mobility and, over the past fifteen years, have derived much of their structure and impetus from the concern that societies provide equality of opportunity for their members. In their basic form the models link educational, occupational, social and economic attainments in one generation to those in the next, principally through educational attainments (see, for example, Jencks et al., 1972). Status attainment oriented research looking at occupational attainment and social mobility in Australia is exemplified in the work of Broom and Jones (1976), Jones et al. (1977), and Broom et al. (1980). The general status attainment model also subsumes studies that focus on only a part of its structure; for example, on the social processes that affect educational attainment, or on the transition from school to work. Keeves (1972), Connell et al. (1975), Radford and Wilkes (1975), Poole (1978) and Rosier (1978) are well known examples and more may be found in the review undertaken by Sturman (1979) as a part of this project.

The status attainment model we have adopted to guide and integrate our research efforts is portrayed in Figure 1.1. In this model we define twelve blocks of variables linked in a hypothesized causal process over time - technically this is a block-recursive model, to use Blalock's (1969:71) term. The nature of the status attainment processes hypothesized is captured in the spatial ordering of the blocks of variables. Three interpretive rules specify these hypothetical processes. First, variables within each

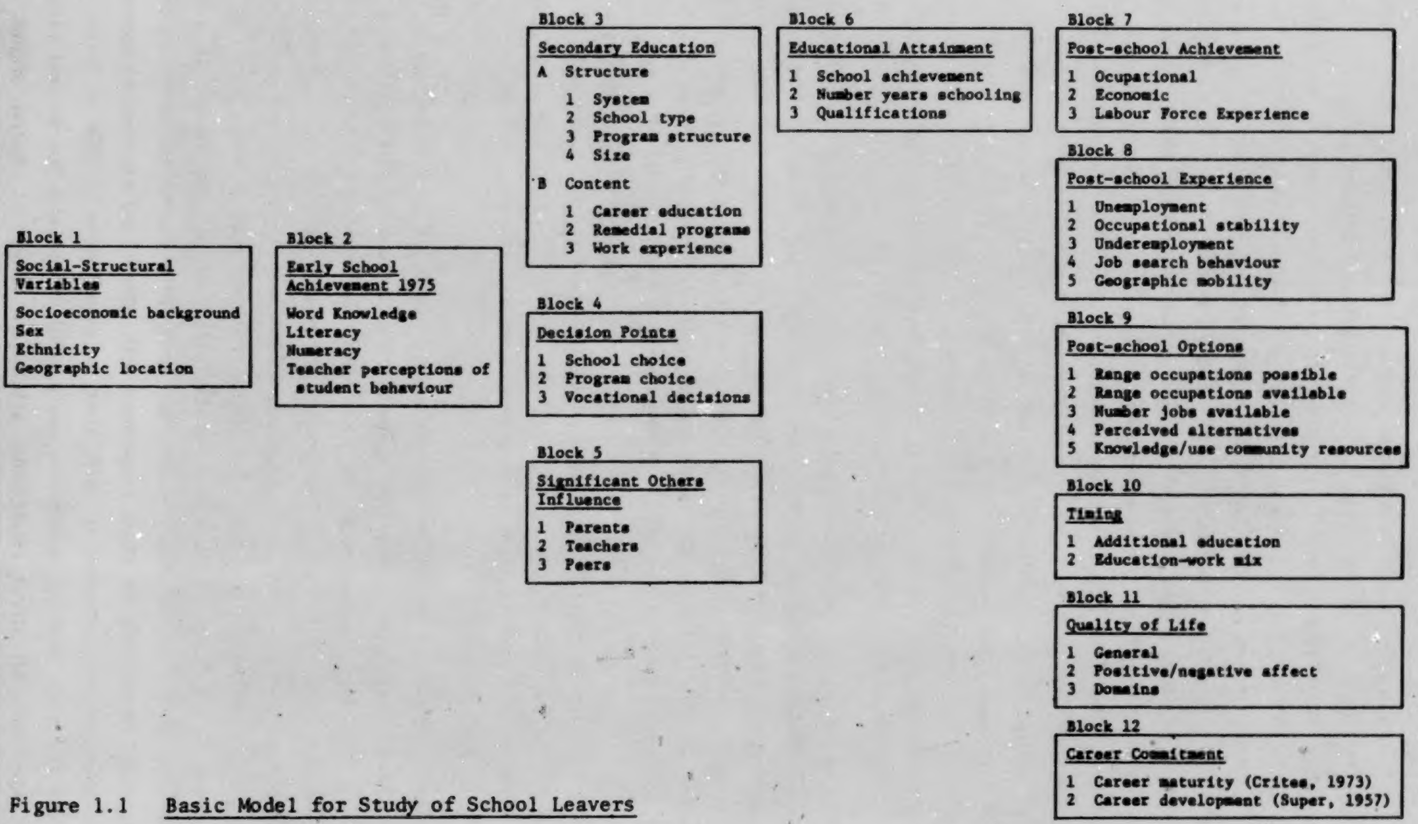
Block 1
Social-Structural Variables
Socioeconomic background
Sex
Ethnicity
Geographic location
Block 2
Early School Achievement 1975
Word Knowledge
Literacy
Numeracy
Teacher perceptions of student behaviour
Block 3
Secondary Education
A Structure
1 System
2 School type
3 Program structure
4 Size
B Content
1 Career education
2 Remedial programs
3 Work experience
Block 4
Decision Points
1 School choice
2 Program choice
3 Vocational decisions
Block 5
Significant Others Influence
1 Parents
2 Teachers
3 Peers
Block 6
Educational Attainment
1 School achievement
2 Number years schooling
3 Qualifications
Block 7
Post-school Achievement
1 Ocupational
2 Economic
3 Labour Force Experience
Block 8
Post-school Experience
1 Unemployment
2 Occupational stability
3 Underemployment
4 Job search behaviour
5 Geographic mobility
Block 9
Post-school Options
1 Range occupations possible
2 Range occupations available
3 Number jobs available
4 Perceived alternatives
5 Knowledge/use community resources
Block 10
Timing
1 Additional education
2 Education-work mix
Block 11
Quality of Life
1 General
2 Positive/negative affect
3 Domains
Block 12
Career Commitment
1 Career maturity (Crites, 1973)
2 Career development (Super, 1957)

Figure 1.1 Basic Model for Study of School Leavers

block are affected by all variables in blocks to the left of them — the causal ordering of the variables runs from left to right. Second, the causal relationships among blocks of variables not separated horizontally are unspecified and, hence, unexamined within this model. Thus, although we postulate that the occupational attainments captured in blocks 7 through 9 are outcomes of social structural variables along with educational achievements, experiences, and attainments (blocks 1 through 6), we do not hypothesize cause-effect relations among these blocks. One could do this, of course, and estimate such a model, but for our present purposes we choose not to do so because of the tenuousness of the supporting arguments we would need to make. Variables within these blocks are seen simply as multiple occupational attainment outcomes of the processes captured in the model. Similarly, we do not specify causal relations among blocks 3 through 5. Third, the causal relationships among variables within blocks remain unspecified with the variables seen as multiple causes or effects; Literacy and Numeracy, for example, are seen as multiple outcomes of social-structural differences, and multiple influences on the variables in blocks 3 through 12.

The model illustrates a postulated system of social processes implicated in the attainment of educational and occupational statuses. Four general characteristics of this system capture its overall meaning. First, the social-structural variables in block 1 are treated as givens - they are predetermined or exogenous variables and the explanation of their variation lies outside the scope of the model. As such, they are seen as potential antecedents of all the remaining variables within the model, those specified in blocks 2 through 12. That is, we are hypothesizing that some part of the observed variation in educational achievements, experiences and attainments (blocks 2 through 6), and in occupational attainments (blocks 7 through 12) is a function of membership in groups defined by socioeconomic criteria, by sex, by ethnicity and by geographic location.

Second, the social processes represented are processes in time and are causal in nature. Thus, characteristics ascribed at birth - the social-structural variables noted in block 1 - influence achievement in the early years of high school (block 2). Socioeconomic, sex, ethnic, and geographic (regional, rural-urban) differences in educational achievement are well established. In turn, these sets of ascribed and achieved characteristics affect the school experiences we have noted in blocks 3, 4 and 5. Because of the time sequence implied the components of the 'structure', 'content' and 'decision points' of secondary education, along with the influence of significant others, would necessarily be those associated with educational experiences subsequent to the achievements measured in 1975; that is, experiences in 1976 or later years. Following the same pattern, ascription, early achievement and the several facets of school experience all affect educational attainment (block 6). Social origins, early achievement, the program structure of the school, career education, choice of school, and the encouragement of parents, for example, all serve to affect later achievement in school, and early school leaving. Similarly, the model hypothesizes that all of the preceding variables contribute to the explanation of the observed variation among individuals in their occupational attainments, experiences, options, post-school education, career commitment and the overall quality of their lives (blocks 7 through 9) - multiple occupation-related outcomes of ascribed chacteristics and achievement within the education system.

Third, to this point we have considered, by implication, only the direct effects of variables; for example, the effects of the social-structural variables (block 1) on occupational attainments (blocks 7 through 12). However, while it is possible that one's ethnicity or geographic location affects occupational attainments directly - through ethnic discrimination and restricted job opportunities, for example - it is also likely that these ascribed characteristics affect occupational attainments because they influence educational attainment which, in turn, affects occupational attainments. In other words, the model also allows for an examination of the indirect effects that a variable may have on others by way of intervening variables.

Fourth, in recognition of the imperfect nature of social theories, and of the likelihood that 'luck' contributes to attainments more often than we think (cf. Jencks et al., 1972), systems of this kind allow for less than perfect explanation of the observed variation in each of the several blocks of variables. In the explanation of this variation some part is attributed to variables specified within the system, and the remainder to unspecified influences extraneous to the system.

We believe we have captured the components of the terms of reference within this model. Consider these terms of reference one by one beginning with point 5.

a Point 5 specifies an examination of the relationships between a group of social-structural variables (social background, sex, ethnic origin, geographical location) and the school and post-school achievement and options of these school leavers. In Figure 1.1 these relationships are captured in the linkages between Blocks 1, 2, 6, 7 and 9.

b Point 4 concerns the association between educational attainment and post-school options, relationships captured in the linkages between Blocks 6 and 9.

c Point 3 focusses on critical points in school experience and their long term effects. We incorporate the decision points in Block 4 and the long term effects in Blocks 6 through 12. Note too that because the study extends over a two year period with repeated questionnaires to the respondents, variables in Blocks 7 through 12 may be measured at several points in time. By so doing we hope to trace the development of the early career among our respondents.

d Point 2 is the subject of two closely linked studies looking at the quality of school life and the influence that this information may have on decision-making within schools. As such, they are outside the context defined by this model and will be treated in later reports.

e Point 1 stresses the effects of the structure, timing and content of secondary education on the post-school experience of school leavers. The structure and content variables are included (in a necessarily limited way) in Block 3. In view of the youth of our sample the interpretation we have given to the 'timing' variable is that of additional education gained after first entering (or attempting to enter) the workforce; in short, we examine re-entry into education, or an education-work mix, as an outcome of school experience. Thus, we capture the relationships in question in the linkages between Block 3 and Blocks 7 through 12.

As well as allowing for a direct examination of the relationships specified, the form of the model allows us to examine, in addition, the way in which these relationships come about. For example, not only can we address the basic equality of opportunity issue posed in point 5 - subpopulation group differences in achievement and options - but we can also explicate to some degree the way in which these differences, if there are any, come about. Do they come about, for instance, because there are subpopulation group differences in the structure and content of secondary education; because there are subpopulation group differences in the 'decision point' variables which affect achievement and options; because there are different patterns of 'significant others influence' between subpopulation groups that lead to differences in achievement; and so on? In brief we can examine indirect effects of the variables of interest as well as their direct effects on the outcomes specified.

We included other categories of variables as well as those specified in the terms of reference: the literacy and numeracy capabilities and school behaviours of the individuals (data from the 1975 study); the influence of significant others, a consistently demonstrated influence on achievement; variables measuring 'quality of life' as evidence of the affective concomitants of achievement; and a group of variables we have called 'career commitment' which we see as both a cause and effect of status attainment, and one that is likely to change with experience in (and out of) the workforce.

The Research Program

Within this framework we have developed six complementary studies whose nature is indicated below.

1 Literature Review

A review of Australian research on the transition from school to work (Sturman, 1979).

2 **A Study of School Leavers**

A three-year study of status attainment during the transition from school to work or further education, and during the early career, based on a nationally representative sample of more than 6200 17- to 18-year-olds.

3 **The Development of Vocational Decisions**

A three-year study of the development of vocational decisions among students during the early years of high school, based on a nationally representative sample of 13- to 14-year-olds.

4 **Quality of School Life**

The development of a theoretical model that defines the meaning and structure of 'quality of school life'; the development of a measure of this multifaceted construct; and, to address the second term of reference, a survey of the perceptions of students about the 'quality of school life'.

5 **Case Studies**

Again in connection with the second term of reference, case studies of the quality of school life and of the way in which decision-making in schools is influenced by information about the perceptions that students have of the strengths and weaknesses of their schooling.

6 **The Psychosocial Consequences of Unemployement**

A study of the psychosocial consequences of unemployment using interview techniques.

The several studies complement each other. The literature review provides the established fact - or lack thereof - to form a basis for the second, third and sixth studies noted. Data on unemployed youth obtained in the Study of School Leavers contribute to a preliminary understanding and identification of the sample for the sixth study. The 'quality of school life' component contributes not only a theoretically grounded measure of a unique and largely unexamined outcome of schooling, but one integrated into a model of developing vocational preferences (study number 3), and one which provides information potentially useful for school decision making (study number 5).

The First Eighteen Months

The status of this research program at the close of 1979 was as follows.

1 A review of Australian research on the transition from school to work was completed by Andrew Sturman and published as Issue Number 13 of the Australian Education Review (Sturman, 1979).

2 Data on phase one of the Study of School Leavers was in hand, encoded, and merged with the Literacy and Numeracy data obtained from these same adolescents in 1975. The description of this phase of the study and the analyses undertaken are the substance of the remainder of this report.

3 Basic descriptive information on phase one of this study has been disseminated to all respondents as a report entitled 'Between School and Work'.

4 Phase two of the Study of School Leavers went into the field in November with a second mail questionnaire to all respondents. The first followup mailing was undertaken in December and a second in February.

5 Data on phase one of the vocational decision-making study has been obtained from a nationally representative sample of 13- to 14-year-olds. The information obtained from these data is the substance of a forthcoming report.

6 A measure of 'quality of school life' from the perspective of students has been developed and field-tested on the 13- to 14-year-olds mentioned above. These developments are to be detailed in Williams et al. (1980).

7 Developmental work on the case studies of the quality of school life and the influence of information feedback on school decision-making has been completed and the study will begin early in 1980.

8 Developmental work on the design of the 'Psychosocial Consequences of Unemployment' component of the research program is complete and fieldwork will begin in 1980.

CHAPTER 2

INVESTIGATING THE TRANSITION

In this chapter we describe phase one of 'A Study of School Leavers' and how it came to have the form that it does; namely, a mail survey of 6247 individuals aged between 14 years and 14 years 11 months on October 1st 1975, the group comprising the older sample in the Literacy and Numeracy study conducted by ACER in that year. As noted earlier, we decided on a followup study for the following reasons.

1 We had a national sample and, thus, could make inferences for Australia as a whole.

2 The sample was the right age. In the summer of 1978-79, the time of the survey, respondents were either 17 years old or in the first months of their eighteenth year. Educationally this placed them as early school leavers of one or two years standing, or in the final years of high school and facing the transition to work or further education.

3 We had data on their capabilities in basic skills. In other words we could address the common presumption that unemployment among the young is due, in part, to employers being unwilling to employ youth who cannot write, read, and count adequately.

4 We had a mail contact point for each individual in the form of a 1975 self-reported home address, along with the name of the school attended in that year.

Basic Considerations in the Design of Phase One

Given this sample, the likelihood of a three-year study, finite funds, and the terms of reference for the study, the fundamental design issue faced was one of how to strike the best compromise between what we wanted to know, what we could reasonably expect respondents to provide, and what we could afford.

A Simplified Status Attainment Model

What we wanted to know is detailed in Figure 1.1 and represents a substantial amount of information, more than we could expect respondents to provide at one time, questions of resources aside. It seemed reasonable, however, to anticipate collecting these data over a three-year period such that each contact with the sample produced both background data as well as data on the development of careers.

In choosing which questions to ask now and which to defer to later questionnaires we adopted the position that it would be more appropriate to provide partial answers about the whole model now rather than detailed answers about only a part of it. That is, while we might have limited phase one questions to details of educational attainments and experiences only (blocks 3 through 6 in Figure 1.1), we chose instead to ask a limited number of questions from most of the variable blocks in Figure 1.1 to provide skeletal information on the total model, information to be fleshed out in more detail in later contacts. This is consistent with what we have noted as one desirable characteristic of research designed to inform social policy (ACER, 1979: 30); namely, that of providing partial information throughout the course of a project rather than reserving all information for a final report, in this case, three years hence.

The selection of variables for this simplified model was not completely divorced from practical considerations that entered into the questionnaire design. In the first instance we selected a subset of variables thought necessary to define the model in a way that would provide information on the questions posed in the terms of reference. However, not all of these were included in the questionnaires; variables surviving this second elimination process were those judged appropriate in the balance with the practical limitations imposed by space, judgments about their sensitivity to respondents and so on. These considerations are detailed below in the section entitled 'Development of the Survey'.

The simplified model we have adopted for phase one is shown in Figure 2.1. We hope to capture some of the effects of geographical location in the form of differences in State educational systems, regional economies and labour markets by incorporating State as a variable. School system (Government, Catholic, and Independent) has been included for two reasons: first, because of the seemingly widespread belief that the nature of education differs between the systems, and second, because success in the early career may be influenced by sponsorship operating through the informal networks thought to characterize the non-Government - and some Government - schools. We have included school rurality as well as another component of geographical location to address the belief that rural schools are disadvantaged in ways that affect the social and economic success of their alumni.

The educational and occupational attainments of parents are seen to have influence principally through the between-family differences in the example, encouragement and the environment they engender. The foundation for family size effects is a resource sharing argument where the resources are both parent-child contact and the economic resources of the family. The basis for postulating family rurality effects rests on the notion of sociocultural differences between rural and urban families and is discussed later in connection with the development of the rurality index. The justification for supposing ethnic group differences is outright ethnic discrimination in the labour market and/or subcultural differences in value orientations, analogous to supposed rural-urban differences. For similar reasons, the sex of these adolescents is included as well.

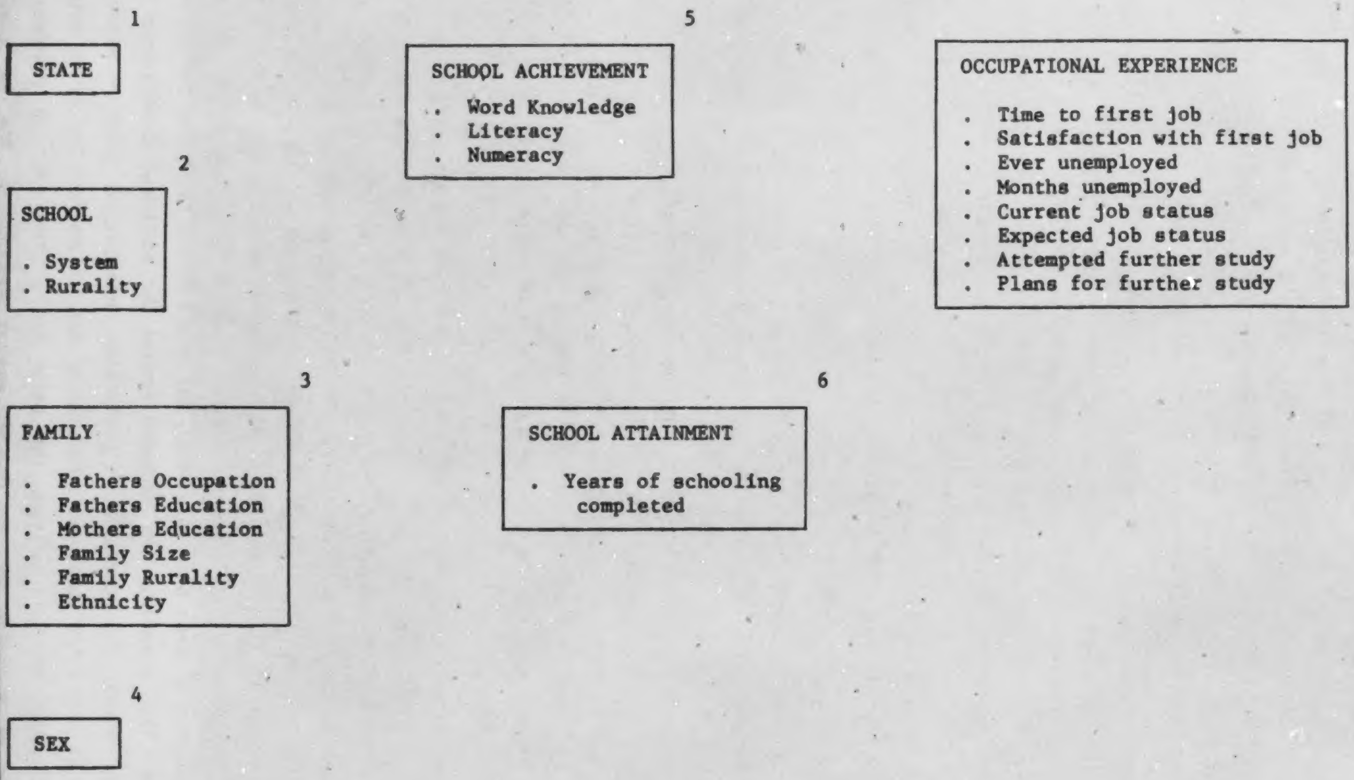
1
STATE
2
SCHOOL
. System
. Rurality
3
FAMILY
. Fathers Occupation
. Fathers Education
. Mothers Education
. Family Size
. Family Rurality
. Ethnicity
4
SEX
5
SCHOOL ACHIEVEMENT
. Word Knowledge
. Literacy
. Numeracy
6
SCHOOL ATTAINMENT
. Years of schooling completed
7
OCCUPATIONAL EXPERIENCE
. Time to first job
. Satisfaction with first job
. Ever unemployed
. Months unemployed
. Current job status
. Expected job status
. Attempted further study
. Plans for further study

Figure 2.1 Simplified Status Attainment Model

These ascribed characteristics of the individuals in our sample are seen to influence their achievement in school as this is reflected in measures of Word Knowledge, Literacy and Numeracy, and their educational attainment measured as 'years of schooling'. All the preceding ascribed and achieved statuses of these individuals are present prior to entry into the labour force and are postulated as influences on the several occupational and educational statuses attained after entry.

This simplified pattern of relationships speaks most directly and comprehensively to points four and five in the terms of reference for the study. A range of social-structural variables encompassing those actually specified - 'social background, sex, ethnic origin and geographical location' - is included, and we examine their effects on school and post-school achievement (point five). We include as well measures of school attainment and length of schooling to address the concerns of point four. Furthermore, because we have detailed information about the post-school experience of school leavers we can also provide information pertinent to the concerns of point one.

Resources and Research Design

Given a model consistent with the terms of reference for the study, the design question faced then was one of how to optimize sample coverage, data quality and rate of response within the limits imposed by fixed resources. Data collection in personal interviews, the preferred mode, was out of the question for reasons of sample coverage - we could not afford to interview the numbers necessary to provide reliable estimates. For similar reasons telephone interviews were rejected as well. As a result we saw no alternative to some form of mail survey to provide the sample coverage needed, recognizing the potential risk to data quality and sample response entailed in this less personal approach.

The question asked then was one of whether to survey all 6247 individuals or to select a subsample of these. We had, for example, the option of directing our efforts at a sample of some 1200 individuals representative of the national population. This sample would be devised by eliminating the oversampling used to provide State estimates. By so doing we would trade off the capability to provide State estimates against the advantage of being able to invest more resources per person in the smaller survey as a hedge against non-response. It would be possible, for example, to plan on a telephone followup of some non-respondents, and even personal interviews for the least co-operative. This attraction was balanced against the additional disadvantage that small groups within the population - particularly unemployed youth - would be represented by only a few individuals. Because of this, and because the survey data on unemployed youth were to provide the basis for a study of the psychosocial consequences of unemployment, we decided against subsampling. We did, however, design a nationally representative subsample (N = 1250) as part of a contingency plan to cover the possibility of a poor response from the mail survey to the total sample. Had the 6247 individuals been resistant to providing the data we asked for we would have directed increased resources per person to this smaller group; plan B, so to speak. In fact, to counter the possibility that Murphy's Law might prevail, we developed Plan C as well, based on a core subsample of 375. (Murphy's Law has the form: 'If anything can go wrong, it will.')

With a mail survey of the total sample in mind we addressed the question of how to allocate resources within the survey. The principal objective was to overcome the impersonality of mail surveys. Because personalization of survey material costs money we planned a graduated approach that increased the degree of personalization from the initial mailing to all 6247 individuals through the three followup mailings to non-respondents. In this way we directed more resources per person to the least responsive members of the sample, placing the effort where it was needed most.

Details of the procedures we followed - those successful and those less so - are provided in the following section 'Development of the Survey'. Readers less interested in knowing the intimate details of the day-to-day operation of the survey may safely skip this section.

Development of the Survey

The substance of this section is a description of the development of the project from its initial design through to the final stage of merging the newly obtained data with that available from the 1975 Literacy and Numeracy survey. Information of this kind is usually given only a summary treatment in research reports. It is reported here in some detail in response to a concern within the ERDC that research reports ought to serve a training function, and might do so by providing a more elaborate description of practices adopted, judgments made, and pitfalls encountered during the project.

Sampling: Plan A, Plan B (and Plan C)

Once committed to the idea of a followup survey by mail of 6247 17- to 18-year-olds not accessible through the schools, of variable education, and scattered across Australia, three main considerations guided our thinking. First, we needed a good response. Second, we needed as good a quality data as we could get. Third, we needed to maintain the goodwill of the respondents over at least a three-year period in which we would contact them again several times.

Our main worry at the time was the uncertainty about what level of response we could expect. We were not encouraged by the 'best guesses' of our colleagues who predicted somewhere around 50 per cent after several followups. Moreover, we had, in effect, entered into a contract to provide the information requested in the terms of reference and could not, in good conscience, engage in an all-or-nothing gamble with the resources made available to us. Thus, we had to provide a fail-safe component to the research design. As noted earlier, this simply meant 'Plan A', 'Plan B' (and 'Plan C'). Plan A centred on a mail survey to all 6247 individuals in the sample. As a first step we would assign a part of our resources to the preparation and mailing of 6247 questionnaires. If the response was encouraging further resources would be allocated to a first mail followup of non-respondents and, if this was encouraging, resources would be allocated to a second followup, and so on. In short, resources would be committed as we monitored the success of the survey.

If, on the other hand, the response to the first mailing was not encouraging we would fall back to Plan B in which we allocated our remaining resources to a smaller number of individuals, 1250 in all, at the sacrifice of sample coverage but with a somewhat higher probability of obtaining the information needed. Plan B was, in effect, a middle ground. The smaller sample was still representative of the national population in this age cohort and, thus, would provide data that allowed conclusions about school leavers across the nation, at the cost of finer breakdowns within the analyses. However, the sample size was still too large to engage in other than a mail survey as a means of data collection. The trade-off made was one of sacrificing sample size in order to be able to invest more heavily in followup activities designed to increase the response rate. We could, for example, plan on personalizing letters, tracing individuals through electoral rolls, following up by telephone and, possibly, undertaking some limited face-to-face interviews with the least co-operative.

As noted earlier, Plan C was designed as the final fall-back position, a contingency plan to be evoked only if Murphy's Law prevailed in force. If Plan B went badly, to the extent that we had a disproportionate number of non-respondents requiring expensive followup procedures, then we planned to revert to Plan C. This meant abandoning mail survey approaches to concentrate solely on the costly followup procedures noted in Plan B. Give that resources were fixed, sample size had to be reduced to, we estimated, around 375 individuals as the best compromise between acceptable statistics and available resources. Even then the uncertainty of our estimates would have been substantial, providing only the most tentative of conclusions about school leavers and the transition from school to work. Our feelings about Plan C are indicated in the heading of this section where we show it in parentheses.

Plan A Sample. This sample comprised the total group of 14-year-olds sampled in 1975 as part of the Literacy and Numeracy study. The sampling design is discussed in detail in Keeves and Bourke (1976:12-24). Briefly, it is a two stage design in which schools throughout Australia were sampled with a probability proportional to size and then 25 students of appropriate age sampled randomly within each school. In order to provide State estimates there was oversampling of schools in some States. The design is summarized in Table 2.1 below.

Table 2.1 Summary of Sampling Design for Australia for the 14-Year-Old Sample

	Population (1974)		Designed and Expected Samples		Achieved Sample		Ratio = Achieved / Designed	
	Schools[a]	Students	Schools	Students	Schools	Students	Schools	Students
14-Year-Old Sample								
NSW	594	84,894	40	1000	38	953	0.95	0.93
Vic.	580	66,550	40	1000	39	959	0.98	0.96
Qld	286	38,106	40	1000	37	902	0.93	0.90
SA	182	24,152	40	1000	38	943	0.95	0.94
WA	184	20,842	40	1000	39	937	0.98	0.94
Tas.	91	8,290	40	1000	39	948	0.98	0.95
ACT	22	3,309	20	500	17	418	0.85	0.84
NT	11	1,275	20	500	10	207	0.50	0.41
Total	1,950	247,418	280	700	257	6,247	0.89	0.86

[a] Special schools and institutions and schools about which no information was available have been excluded. Source, Keeves and Bourke (1976:20).

Table 2.2 Summary of the 'Plan B' and 'Plan C' Sample Designs

Location	'Plan B' Sample Schools	'Plan B' Sample Students	'Plan C' Sample Schools	'Plan C' Sample Students
NSW	38	380	38	114
Vic.	35	350	35	105
Qld	21	210	21	63
SA	13	130	13	39
WA	11	110	11	33
Tas.	4	40	4	12
ACT	2	20	2	6
NT	1	10	1	3
Total	125	1250	125	375

In this design only 'normal' schools were to be used - special schools which cater for children with special needs were to be excluded from the population sampled. However, in the NT no distinction was made in the sampling between Aboriginal students attending small schools in remote localities and students, whether Aboriginal or not, who attended schools in the towns (see Bourke and Keeves, 1977:132). Consequently, the population of 14-year-olds from which the NT sample was selected differed somewhat from those sampled in the six States and the ACT. It should also be noted that the sample design excludes those in this age cohort who are not enrolled in or not attending secondary schools at all.

Plan B Sample. To construct this sample we simply abandoned the oversampling of schools in the original design and, by so doing, gave up the possibility of producing State estimates. Thus, schools are represented in this sample in proportion to the population of the State or Territory from which they come. This sample design involved selecting 125 schools out of the 257 in the original sample, then selecting students from each school, and that for the 'Plan C' sample. The sample design is described in Table 2.2.

Plan C Sample. The sample for Plan C consisted of some 375 individuals, three from each of the schools in the Plan B sample. These were still representative of the national population within this age cohort but with a sample this size statistics are less reliable and conclusions less certain as a result.

Tracing the Sample

Our primary contact point with each member of the sample was the student's home address in October 1975. When work began on sample selection in mid-1978 the addresses we had were almost three years old and it seemed likely that many would be out of date. We considered a number of ways of updating these addresses, the most practical being to approach the schools who provided the students in the sample and to ask them to update, where possible, these addresses.

During June 1978 a letter and two forms containing the lists of the twenty five students sampled in each school were sent to the principals of the secondary schools sampled in the 1975 study. On one form the principals were asked to update addresses of the students where possible, and to indicate on the second form whether the students were still attending the school. If they had left for another educational institution we also asked the name and address of that institution . In July a followup letter was sent to the 74 schools which had not replied, and in August a second followup letter was sent to the 14 schools with replies still outstanding at that time. A copy of the original forms and a stamped reply envelope was enclosed with both followups. By the end of August we had received replies from all of the 257 schools. In cases where a student had transferred to another school, a letter was sent to the principal of the new school with a form attached asking for current information on that student.

The schools were helpful beyond expectation. Not only did they check the currency of their students' addresses (to the extent of checking telephone directories and making local enquiries in many cases, as well as drawing from their own records) but many were also able to provide information on the current occupations of their ex-students. Letters from the principals which accompanied some of the returns noted such things as changes in the occupational preferences of their students (towards apprenticeships, for example, and away from higher education), the effectiveness of work experience programs and comments on the local unemployment situation. Some of these letters were quite detailed and made a valuable contribution to our thinking during the design of the study.

By October 1978 we knew that about one-third of the sample had changed addresses since 1975. New addresses were available for over 75 per cent of these. However, we were still left with more than 1500 students whose home addresses the schools were unable to verify. No further resources were invested in tracing these students at this time. We used their 1975 addresses in the hope that they and/or their parents still lived there, or that mail would be forwarded on. Decisions about how to handle the 'address unknowns' were delayed until after the first mailing at which time the size of the problem would be known.

The information returned from the schools was coded on two cards for each respondent. Card A contained the ID number along with the name and address of the respondent. These records constituted our link file, the only file that links names and ID numbers. Names do not appear on data files. The link file is kept secure and used only to produce address labels. Card B contained the ID plus other relevant information; for example, whether the respondent was still at school or not, date of leaving, destination of student, a code for same or new address, and whether we were sure or unsure of the address given.

Questionnaire Design

Basically, the nature of the questionnaire evolved from our attempts to optimize judgementally two competing demands. While the overriding consideration was that of achieving a high response we were concerned that we obtained quality data at the same time, though we realized that this quality might need to be compromised a little. For example, we thought it unlikely that we could ask a series of questions on unemployment similar to those used by the Australian Bureau of Statistics interviewers in their household surveys. In our judgement, while the data quality might be high among those who responded, not many would respond. Thus, we asked respondents whether they were employed full-time, part-time or were unemployed at the time of the survey. We did not attempt finer discriminations in terms of participation in the labour market or job search behaviour. As a result we do not have precise employment estimates comparable to those published by either the Commonwealth Employment Service or the Australian Bureau of Statistics, but we do have approximate estimates from most of our sample.

This process of optimization was influenced by what we knew already about our sample, and we made the following assumptions. First, questions should be salient to the individuals involved and should look salient. Thus, our questions were straightforward, factual, and about school and work. We consciously omitted questions to do with self-concept, locus of control and similar psychological variables for this reason. Second, we judged that questionnaire survival was partly a function of length, and that length had two immediately recognizable indicators - multiple pages and staples. Thus, we limited our questionnaires to a single page (even though the single page was, in one case, an A3 size sheet). Third, we argued that non-response was likely to be concentrated among the earliest of early school leavers. For this reason we emphasized simplicity of language and presentation through short sentences and simple instructions reinforced by non-verbal cues such as arrows leading from one response to the next, or pointing hands where respondents were to skip questions. The whole issue of looping within the questionnaire was debated at length and, although we would have preferred not to complicate the questionnaire in this way, we saw no other alternative within the available space. Fourth, we considered each question in terms of its likely sensitivity to the respondents and, hence, the likelihood of obtaining a response to the question itself and, also, whether it was likely to jeopardize the response rate as a whole; would respondents abandon the whole questionnaire because of a single sensitive question? For this reason, and because we wanted to ask somewhat different questions of students and early leavers, we chose to use separate questionnaires for each group. However, because we could not be absolutely certain of our classification 'student/leaver' we included a 'fail-safe' question in each questionnaire to catch the misclassifieds who would then receive the correct questionnaire in a subsequent mailing. When in doubt we classified respondents as 'school leavers'.

Copies of the questionnaires are included as Appendix A. These illustrate as well our attempts to reinforce instructions and clarify presentation through the use of graphic design: boxed questions; arrows to indicate flow; broken borders to show entry points and to highlight the pattern of flow; 'printers hands' pointing to loops to be taken; and the use of differing type size and style to identify instructions, questions and responses.

Other Design Issues

Addressing. We judged that personally addressing letters and envelopes would absorb too much in typing costs, especially in view of the repeated mailings planned. This had two consequences: first, we included our 'covering letter' on the questionnaire itself as part of the instructions; and second, we chose to address the envelopes using machine-printed adhesive labels. To accomplish the latter task the names and addresses of the 6247 individuals had to be made machine-readable. Key-punching these data absorbed some resources early in the project but provided us with a low-cost and rapid means of addressing followup material and further questionnaire mailings, and a file easily updated for address changes. The computer program used in producing the address labels from this file is shown in Appendix B. The program is written in FORTRAN IV and should be easily adaptable to most machines.

Mailing. Mail survey research, particularly within the United States, has given rise to a sizeable body of folklore about what one does to mail to achieve a high response rate. Among the recommendations are: using stamps rather than bulk mailing; sending certified mail; 'personally' signing letters; using different colours or shapes in envelopes; enclosing money; and so on. Most likely much of this is an advantage peculiar to the U.S. where questionnaires must compete with third-class 'junk' mail. As noted above we ignored two of these prescriptions: first, by using computer-printed address labels for the envelopes; and second by failing to personally address letters to respondents. As before, this was a judgement that weighed cost against the potential advantage that would accrue. We did, however, follow the advice about stamps, sticking one on the mailout envelope and one on the return envelope enclosed with the questionnaire as an attempt at personalization. In addition, special envelopes were printed in the hope that the design might stimulate the forwarding-on of mail in cases where our addresses were out of date. (In an article published in August 1978, and reaching us some months later, Heberlein and Baumgartner suggested that much of this folklore is without foundation and that the salience of the questionnaire to the respondents is all that really matters.)

Followup letters. Followup letters and further copies of the questionnaires were sent to non-respondents. In these we stressed informality and an increasingly personal approach. The first of these was an unaddressed and unsigned 'circular'; the second was signed individually but not addressed; and the final reminder was addressed directly to the respondent and signed.

Administration

As noted earlier, preparation of the survey proper began in October 1978. The questionnaires and envelopes were designed and printed and the address labels and check-lists were run off on the in-house computer. Each questionnaire was marked with the same respondent ID assigned during the 1975 study, handwritten in the top right hand corner. We considered having the questionnaires numbered serially during printing and using this serial number to identify respondents. This idea was rejected on two grounds: first, creating the link file between these serial numbers and the existing respondents IDs would take as long as it would to write the IDs on the questionnaire by hand; and second, it would unnecessarily complicate the merging of our data with the existing Literacy and Numeracy data.

The mailout itself began in November. We were a little apprehensive about having a large survey in the field over the Christmas period, expecting postal delays and problems with respondents being on extended holidays. In fact there were few problems, apart from a protracted mail strike in Sydney which slowed the mail in New South Wales and the Australian Capital Territory. The rate of return of questionnaires is depicted in Figure 2.2 and clearly shows the effects of the reminder letters (mailed in December, late January and mid-March).

Two main problems emerged during the course of the survey. The first concerned respondents who had been misclassified, that is, full-time secondary school students who had received the school leavers questionnaire or school leavers who received the student questionnaire. There were approximately 800 of these, identified by their answers to the 'fail safe' questions. In each case an individually addressed and signed letter of explanation, together with a copy of the correct questionnaire was sent by return post. Eighty-five per cent of the respondents who were misclassified returned this second questionnaire.

The second problem concerned the 475 letters that were returned by the post office marked 'address unknown'. We attempted to trace some of these respondents to a current home address using telephone directories and electoral rolls but found that this required more resources than seemed warranted at the time.

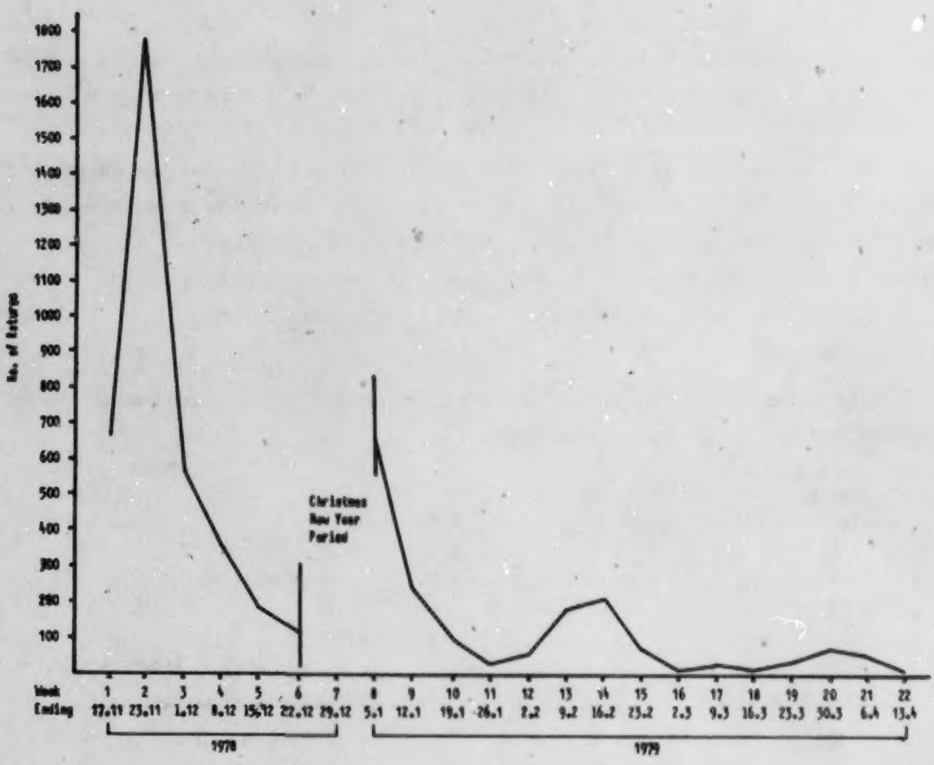

Figure 2.2 Questionnaire Returns, November 1978 to April 1979

Sample Attrition

Attrition of the orginal sample is a common problem in followup studies. It is a product of the usual difficulties of ensuring co-operation from the respondents in a survey compounded by the problem of re-establishing contact several years after the original study. While the dimensions of this problem are a function of the size, dispersion and mobility of the sample, tracing individuals and gaining their co-operation is largely a matter of resources. Eckland (1968) and Clarridge et al., (1976) report a number of followup studies in the US which invested heavily in tracing respondents that, in some cases, had not been contacted for more than five years. Success rates of 85 to 95 per cent were reported.

In the present survey we contacted over 91 per cent of the original sample. Those not contacted were in the following categories:

address unknowns	475 (7.6%)
deceased	16 (0.3%)
no mail sent (overseas, no address found, etc.)	64 (1.0%)
TOTAL	555 (8.9%)

Of those contacted over 86 per cent replied, giving an overall response rate of 78.7 per cent.

In Table 2.3 we provide comparisons between the original and retained samples on a variety of characteristics. The distributions are strikingly similar and support the argument that our non-response is essentially random and thus, not likely to invalidate our generalizations about this age cohort. The one exception appears to be that we have lost slightly more of the least literate and numerate respondents than desirable. In the original sample, 72 per cent had achieved mastery in Literacy whereas 75 per cent of the retained sample are in this category. Similarly, while 74 per cent of the original sample had mastered Numeracy, 77 per cent of the retained sample achieved this level.

To investigate this matter further we calculated measures of bias for nine variables. Bias is defined as the difference between means in the two samples divided by the standard deviations of the original sample (cf. Bachman et al., 1978:258). These data are presented in Table 2.4 and support the earlier conclusion. At worst the degree of bias is only seven per cent of a standard deviation and averages a little more than four per cent. We take this as further support for our assumption of random non-response.

We take this investigation further in Appendix C where we report comparisons of correlations in the two samples, plus comparisons of partial regression coefficients, in order to look at potential bias in relationships. These analyses show only minor differences between the samples in the size of the zero-order and partial relationships. All of this leads us to conclude that sample attrition has been essentially random, that sample bias is minimal, and that generalizations to the whole age cohort are legitimate.

Table 2.3 Comparisons of the Original and the Retained Samples[a]

	Original Sample Percentage (N=6247)	Retained Sample Percentage (N=4919)
State: ACT	6.7	6.5
NSW	14.9	14.5
Vic.	15.4	15.8
Qld	14.4	14.7
SA	15.1	15.2
WA	15.0	15.4
Tas.	15.2	15.4
NT	3.3[b]	2.5
Sex: Male	50.7	49.7
Female	49.3	50.3
No. of Siblings:		
0	2.4	2.4
1	18.0	18.8
2	27.7	28.1
3-5	42.2	41.7
more than 5	8.6	8.4
Non-response	1.1	0.6
Country of Father's Birth:		
Australia	71.5	72.2
Outside Australia:		
English Speaking	13.7	12.6
Non-English Speaking	14.4	14.8
Non-response	0.4	0.4
Country of Respondent's Birth:		
Australia	87.7	88.8
Outside Australia:		
English Speaking	7.8	6.9
Non-English Speaking	4.3	4.2
Non-response	0.2	0.1
1975 School Type:		
Government High School	79.5	77.8
Independent Catholic	13.4	14.5
Independent Non-Catholic	7.1	7.7
1975 School Location:		
Metropolitan	58.4	58.6
Non-Metropolitan	41.6	41.4
Proportion of Sample Achieving:		
Mastery of Literacy	72.0	75.0
Mastery of Numeracy	75.0	77.0

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[a] Comparisons between the two samples are based on unweighted data. With the exception of such comparisons all other analyses reported here use a weighting scheme which corrects for the oversampling in the smaller States and allows us to make national estimates.

[b] All percentages add to 100 per cent.

Table 2.4 Estimates of Sample Bias in the Retained Sample (unweighted data)

Based on unweighted data	Original Sample		Retained Sample		
	N=6247		N=4919		
Variable	mean	standard deviation	mean	standard deviation	Bias[a]
Sex	1.49	0.50	1.50	0.50	0.02
Age in 1975 (in months)	173.37	3.43	173.34	3.45	0.01
Years in Australia (to 1975)	13.16	2.46	13.26	2.27	0.04
Family Size	2.95	1.97	2.90	1.95	0.03
No. of Schools Attended	3.20	1.68	3.08	1.56	0.07
Location of 1975 School	1.42	0.49	1.41	0.49	0.02
Word Knowledge	15.02	8.36	15.63	8.17	0.07
Mastery 14R	0.72	0.45	0.75	0.44	0.07
Mastery 14N	0.75	0.44	0.77	0.42	0.07

[a] Bias is the difference between the means of the original sample and the means of the retained sample, divided by the standard deviation of the former.

Respondents' Reactions to the Survey

We have discussed already the overall reactions of respondents to the survey: almost 80 per cent completed and returned questionnaires to us; 0.5 per cent completed questionnaires and asked that we send no more; 0.7 per cent told us that they would not provide information, either by returning a blank questionnaire, or in other ways; and we infer that about 12 per cent were unwilling to respond from the fact of having neither a questionnaire nor an 'address unknown' envelope returned.

In addition, we received thirteen letters asking for further information and offering comment, plus what amounted to a further six letters written on the questionnaires themselves. We report some of the detail contained in these for the insights it provides on how some 17-year-olds react to receiving a mail survey.

The questions asked are illustrated in the following quotations from the thirteen letters, many of which asked several questions.

1 'What is the aim of your research?'

2 'Where will the results be published?'

3 'What's it to you what education my parents received?'

4 'Will this form help me get a job?'

5 'On whose behalf is this survey being carried out...the C.E.S., the Vic. Gov., or the Tas. or Vic. Education Department?'

6 'Would you be able to send me the results?'

7 'Why is it necessary to reference number the survey sheet?'

8 'Where did you obtain the information about Australia's 17-year-olds?'

9 'Is it to be used for political lobbying?'

We replied personally in each case to answer these queries, to provide information about courses of training in a few cases, and to thank those who had offered comments without asking for information.

These are all very straightforward and eminently reasonable questions to ask. Perhaps they are indicative of the kinds of questions that our non-respondents asked themselves before deciding not to reply, but more likely that non-response had other bases. Nevertheless, they are issues that should be explained fully to respondents. The hard part is deciding on how to do this in a way that respondents will read, in the first instance, and understand as well. In the design phase we considered how this might be done, estimated that it would take a two to three page letter to explain in simple terms, predicted that few would read through this and more would abandon the exercise at the sight of it and, as a result, decided on the limited statement shown on the front of each questionnaire. With the benefit of hindsight we think now that it might have been of value to include a brochure describing the study and anticipating these questions along with the first questionnaire. As a brochure, rather than covering letter, the respondent would have the option of reading it or not, it would head off any resistance of the kind noted in the questions above and, we hope, would go some way toward reassuring respondents that there were no hidden agendas in the research.

Report to Respondents

In October 1979, a report entitled 'Between School and Work' was mailed to each of our 4919 respondents, and to the 500 or so who did not respond to any of our contacts. In doing this we were motivated by three considerations. First, people who participate in research studies deserve some recompense for their time and consideration, and those conducting the research are obligated to provide it, even if it is only information. In addition, a report to respondents is also a form of recognition of the respondent's effort - recognition, we argued, not acknowledged adequately by a mimeographed sheet.

Obviously, we were not unaware of the benefits to the study and its continuation of this exercise in dissemination. The second of the motivating considerations was the feeling that respondents typically do not understand how the data they provide will be used and are justifiably apprehensive that the information they provide may be identified with them personally. By providing rapid feedback of aggregate information to these individuals we hoped to illustrate our use of the data. The third consideration that motivated the report to respondents was one of maintaining contact and goodwill during the period between questionnaires. The report was designed around a simple, essentially nonverbal, presentation of the data, principally pie-charts and bar-graphs. Tabular presentation was avoided where possible. We took some pains to make the report visually attractive and comprehensive, within the limits of the resources we could allocate to this aspect of the project. A copy of this report is provided in Appendix D. The original was printed in brown and green on yellow A3 stock and was folded in the style of a roadmap.

The meanings of 'student', 'working', and 'unemployed' need comment. Students were those who indicated that they were full-time students for most of 1978. Those working were defined as individuals who were not full-time students in 1978 and who were employed at the time of receiving the questionnaire. Unemployed respondents were those who were not full-time students for most of 1978 and who were not employed at the time they answered the questionnaire. Our estimates are not directly comparable with CES or ABS statistics on youth unemployment.

The section reporting percentages of students, employed and unemployed for Australia overall and by State is based on responses to the first question in each questionnaire (see Appendix A) along with responses to questions about current employment. National estimates were based on a weighted sample of 4919 and State estimates were calculated on the following sample sizes: ACT = 320; NSW = 710; Vic. = 778; Qld = 725; SA = 749; WA = 761; Tas. = 760; NT = 116.

The section of the report titled 'At School' refers to those respondents who were full-time students for most of 1978. The 'Why Stay at School?' sections are based on answers to question 3 in the student questionnaire shown in Appendix A; the 'Why?' section refers to question 2; and the 'What Next?' pie-chart to question 4. The section of the report entitled 'At Work' is based on answers to the school leavers questionnaire shown in Appendix A. The questionnaire referents to the pie-chart and to the several bar graphs are clear. Note that the data on 'Looking for the Right Job' and 'The Time it Took' are displayed by 'year left school' for obvious reasons.

We would not want to make too much out of these data as they stand. This is a report to respondents. While the data do offer some information on what is happening to this cohort we prefer to base our observations on the more detailed analyses reported in the following sections.

CHAPTER 3

ESTIMATING THE MODEL

In this chapter we discuss the way in which we chose to move from theory to fact - from the hypothetical constructs and patterns of relationships postulated in Figure 2.1 to those real-world operations we used to measure the constructs and to estimate the magnitude of relationships. Under the heading 'Measurement' we discuss the operational form of the constructs in question and, at the same time, describe the characteristics of the sample. Having established the nature of our data we consider what we would like to know from the data in order to address the terms of reference for the study ('What Do We Want to Know?'). This is followed by a discussion of how we might bridge the gap between the verbal theory embodied in our model and the measures of the constructs contained in our data to provide the information we need ('Structural and Statistical Models').

Measurement

The questionnaires sent to students and to school leavers are shown in Appendix A. These, along with the questionnaires and tests administered to the respondents in 1975 (see Keeves and Bourke, 1976; Bourke and Lewis, 1976; Bourke and Keeves, 1977) and some additional census data, provide the measures of the constructs outlined in the model shown in Figure 2.1. The operationalization of each variable is considered below.

Measures other than Rurality

State. This refers to the State or Territory in which the respondent was living in 1975, at the time of the Literacy and Numeracy study. In the interests of simplicity we use 'State' to refer to either State or Territory. State is an unordered categorical variable and, as such, is captured as seven dummy variables, one for each State with the exception of NSW. (We use State name abbreviations throughout.) For example, respondents living in Vic. are scored 'one' on the dummy variable for Vic. and all others are scored 'zero'; respondents living in the ACT are scored 'one' on the ACT dummy variable and all others are scored 'zero'; and so on. In order to estimate the effects of the State variables it is necessary to omit one of them as all the information is contained in N-1 variables and the total. The omitted group becomes the reference group for the interpretation of the State effects. In this case we chose to omit NSW simply because it is the most populous State and therefore is a reasonable standard to assume; thus, all State effects are relative to NSW, the reference group. Each coefficient estimated for one of these dummy variables is interpretable as 'the effect on the score on the dependent variable of being in a category rather than the omitted category' (Lansing and Morgan, 1971:275). Thus, an effect for Vic., for example, is interpreted as the effect of being in Vic. rather than being in NSW. This fact restricts the kinds of interpretations that can be made. We cannot, for example, talk about the overall influence of State of residence, nor can we say which State has the greatest effect. Suits (1957) and Lansing and Morgan (1971) provide more detailed discussions of this technique.

Actually, two variants of the dummy variable technique were available to us. The second approach available in the use of dummy variables is that sometimes called Multiple Classification Analysis (MCA) (Andrews et al., 1973). The coefficients in both approaches bear a simple relationship to each other. The difference is that 'MCA coefficients are all expressed as adjustments to the grand mean, not deviations from a single class which must be excluded from each set when dummy variables are used' (Andrews et al., 1973:6). Thus, using this technique one can provide comparisons of State effects, and we illustrate these in Chapter 4.

However, the usefulness of this knowledge is limited for the simple reason that we cannot give an exact meaning to whatever State effects we find. To know that, other things equal, students in one State score higher, on the average, than students in another tells us no more than that. It does not explain what it is about the two States that causes the difference. Given our data we can only speculate. Nevertheless, we can guess that there will be important State effects for a variety of reasons, not the least of which will be State differences in educational practices and in the buoyancy of economies and labour markets. For this reason it is important to control for State effects even though we may not be able to interpret them exactly. Since it does not matter which procedure one uses to control for State we adopted the one most economical in its use of our resources, the first procedure mentioned above. These same considerations are pertinent to the other variables treated in this way - school system and ethnicity. However, in each case we present both types of coefficients.

The sample is distributed across the six States and two Territories as follows: ACT = 320; NSW =710; Vic. = 778; Qld = 725; SA = 749; WA = 761; Tas. = 760; and NT =116. The total sample size is 4919.

School System. School system attended in 1975 is captured in an analogous way with two dummy variables, one representing attendance at a Catholic independent school and the other attendance at a non-Catholic independent school. Those attending Government schools are the omitted group on the basis that they represent the bulk of the school population and, hence, all school system effects are interpreted relative to the Government school group. We refer to the three types of schools as State, Catholic, and Independent from this point on. In 1975 77 per cent of the sample (3828) were enrolled in State high schools, 15 per cent (711) attended Catholic secondary schools, and 8 per cent (380) were students at Independent schools.

Ethnicity. Several pertinent measures of ethnicity were available from the 1975 data. At that time students were asked to report the country of their birth, that of each parent, the number of years they had lived in Australia, the language they used at home, their parents use and their own use of English, and whether the family read an English newspaper (Bourke and Keeves, 1977: 323-334). These measures tap two basic dimensions of ethnicity - migrancy and language.

Ethnic groups were not specially sampled in the 1975 study and as a result these indicators do not show a great deal of variation; 89 per cent of these students were born in Australia; 91 per cent had lived in Australia for more than 10 years; 95 per cent spoke English at home; and 96 per cent spoke English to their friends. While a composite 'migrancy' index has been developed with these data (Bourke and Keeves, 1977:159), we chose to represent the migrancy and language components of ethnicity in a single indicator based on the student's country of birth, and to use only coarse categories to retain a reasonable proportion of the sample in each category. Three categories analogous to those employed by the Australian Bureau of Statistics in their labour force surveys (cf. Australian Bureau of Statistics, 1979) were used: Australian-born (72 per cent); English-born (13 per cent); and non-English-born (15 per cent). Individuals are defined as 'English-born' if they were born outside Australia but in an English-speaking nation, and 'non-English-born' if they were born outside Australia in a non-English-speaking nation. Ethnic group membership is an unordered categorical variable as well and is represented by two dummy variables. Australian-born respondents are the omitted group and ethnic group effects are interpreted relative to this group.

Father's Occupation. We have adopted the traditional approach to the meaning assigned to 'father's occupation' as a component of family background (for an alternative approach see Wright, 1977). It is seen as an indicator of the relative social and economic standing of the family within the community. Accordingly, we assign occupations a prestige rating where 'prestige' is defined as 'popular evaluations of the general "goodness" (in the broad sense of "desirability") of occupations' (Goldthorpe and Hope, 1972: 21). Overall, the most desirable occupations carry with them the highest social standing and the highest economic status.

Respondents were asked to give the present or last main occupation of their father or guardian, and to describe what he/she does (see Appendix A). A number of possible coding schemes exist for assigning prestige scores to occupations. The most detailed and recent is a three-digit score assigned to each of the more than 400 occupational codes used by the Australian Bureau of Statistics. This is known as the ANU-2 scale (Broom et al., 1977). The following occupational prestige scores are illustrative: independent medical practitioners - 915; teachers (tertiary qualifications)

Table 3.1 Occupational Distributions of Respondents and Their Parents (percentages)

Occupational Category	ANU-1 Scale Score	ANU-2 Mean Score	Father	Mother	Respondents	
					Current	Expected
Upper Professional	1	782	8.2	0.5	[a]	8.6
Grazier	2	662	1.6	0.2	[a]	[a]
Lower Professional	3	623	4.1	10.1	0.9	17.1
Managerial	4	629	10.2	0.8	[a]	1.7
Shop Proprietors	5	500	3.0	1.9	[a]	0.7
Farmers	6	594	5.5	0.8	0.1	0.6
Clerical Workers	7	510	9.2	16.2	12.2	14.0
Military, Police	8	489	1.6	[a]	1.0	3.2
Craftsmen	9	485	20.6	0.6	10.9	13.4
Shop Assistants	10	438	0.7	4.5	6.4	
Operatives	11	403	7.0	5.9	3.6	2.0
Drivers	12	443	7.4	0.4	0.7	1.1
Service Workers	13	432	5.8	12.3	5.5	6.6
Miners	14	420	0.4	0.0	[a]	0.1
Farm Workers	15	467	1.6	0.5	1.5	0.7
Labourers	16	389	5.0	0.9	3.7	0.4
Home Duties				38.2	0.1	1.1
Students					48.7	[a]
Non-response (or could not be classified)			8.2	5.1	5.6	27.3

[a] Percentage of respondents in this category totalled less than 0.1 per cent.

CAE - 780; primary school teachers - 630; policemen - 508; salaried carpenters and joiners - 466; waiters - 389; railway porters and ticket collectors - 341.

Predating this scale are 99-category, 16-category, and 6-category condensations of the full range of occupations (Broom et al., 1965). For reasons of economy we adopted the 16-point ANU-1 scale to code the occupations such that each occupation received a score between 1 and 16 according to the category in which it fell. These categories are listed below in Table 3.1 which describes the distribution of occupations among the respondent's fathers and mothers, along with the distributions of the respondent's own current and expected occupations. Subsequently, category means from the more detailed ANU-2 scale were substituted for these to better represent the range of occupational prestige in the sample (see Broom et al., 1977:113).

Mother's Occupation. Respondents were asked to report their mother's occupation as well and their responses were assigned prestige scores in the same way as for fathers. We chose not to include mother's occupation in these analyses because 38 per cent reported their mothers as engaged in home duties, an occupation for which prestige scores are not available (see Table 3.1).

Table 3.2 Education of Parents (percentages)

Level of Education	Father	Mother
Primary school only	17.8	16.3
Some secondary school	33.4	38.8
Finished secondary school	21.7	27.7
Tertiary degree or diploma	11.8	7.5
Don't know	5.3	4.7
Non-response	10.0	5.0

Current Job Status. Those who were not full-time students in 1978 were asked to describe their present or last main occupation and occupational prestige scores were assigned in the same manner.

Expected Job Status. All respondents were asked to describe the job they expected to have in five years time and this too was assigned a status score in the same way.

Parent's Education. All members of the sample were asked to indicate the highest level of education attained by their parents (see Appendix A). The response category 'Further training (not degree or diploma)' caused some confusion among the respondents and on reflection had little chance of being interpreted correctly (cf. Broom et al., 1980). Fortunately, the respondents interpreted the question as a two-part one calling for a response to one of the four categories of basic education plus one to further training if appropriate. In only one case was 'further training' the only response. Thus, the further training category was abandoned and parental education was coded on a four-point scale with the following categories: 'primary school only'; 'some secondary school'; 'finished secondary school'; and 'tertiary (university, college degree or diploma)'. The distributions obtained are shown in Table 3.2.

Family Size. This measure was available from data obtained in the 1975 survey and is measured as the number of siblings. The weighted percentages with various numbers of siblings are as follows: 0-3%; 1-20%; 2-28%; 3-24%; 4-12%; 5-6%; more than 5-7% (c.f. Table 2.3).

Word Knowledge. Word knowledge was measured in 1975 with the test developed for the IEA studies of educational achievement (Thorndike, 1973). Respondents were required to make judgements of similarity or difference in meaning for 40 word pairs. A correction for guessing was applied.

Literacy and Numeracy. These measures were obtained from the 1975 data on respondents and are fully described in Bourke and Lewis (1976). The several Literacy tests measure reading and writing skills. We restricted our examination to the reading skills measured. The reading tests involved measures of word attack skills, reading vocabulary, language conventions, comprehension and reading for information. The Numeracy tests include measures of the ability to read measuring instruments, to add, subtract, multiply and divide, to read graphs and tables, to do money and time calculations, to use decimals and fractions, and to interpret plans and maps.

Schooling Completed. Our measure of educational attainment applies only to school leavers and refers to years of schooling completed (that is, year level reached). Most of our sample reported leaving school in either November or December, indicating that students tend to finish the school year. For this reason, and because educational qualifications are generally recognized as 'year or level completed', we have expressed this measure as year levels of schooling completed. Respondents leaving school in other months during the school year are credited with a number of years counted to the preceeding year end. Some five per cent of the school leavers reported eight years or less, 13 per cent indicated nine years completed, 59 per cent left after Year 10 and 18 per cent completed Year 11, with five per cent non-response.

Post-school Experience. The measure was estimated as the number of months between leaving school and the 31st December 1978. As such it is a measure of at least three influences on occupational attainments in the early career. First, it measures period effects present at the time of leaving school and, hence, whatever variation over time in social and economic forces may have been present to influence occupational attainments at that time. Entering the workforce in December 1976, other things equal, is likely to have had different consequences than did entering in June of 1978, for example, simply as a result of the changing demand for labour. Second, it is an approximate measure of labour force experience. Third, it is simply a measure of the opportunity to have experienced some of the attainments measured. For example, the more post-school experience one has the higher the probability of being unemployed longer, and to have experienced unemployment, other things equal. For these reasons it is important that we control for the influence of post-school experience; however, for the most part we cannot interpret the effects of this variable and we do not.

Time to First Job. Those respondents no longer full-time students in 1978 were asked to report the year and month in which they obtained their first job. The difference between date of leaving school and this date, expressed in months, was used to create the variable. In interpreting this variable as 'time taken to find a job' we are forced to assume that respondents are actively searching for jobs for this whole period. Twenty four per cent of the early school leavers found a job in less than 1 month, 20 per cent took one month, 16 per cent took 2 months, 8 per cent took 3 months, 4 per cent took 4 months, 3 per cent took 5 months, and 3 per cent took 6 months. Nine per cent found their first job in 7 to 12 months, 4 per cent took 12 to 18 months, and the remainder (2 per cent) took longer or did not find a job at all. Non-response was 7 per cent.

Satisfaction with First Job. School leavers were asked to respond to a question about their first job - 'Was it the kind of job you really wanted?' - by checking one of four categories of response: 'yes', 'almost', 'not really' and 'no'. Responses were coded from 1 to 4 with 'yes' receiving the highest score. The proportions in each category were as follows: 'yes', 39 per cent; 'almost', 19 per cent; 'not really', 22 per cent; and 'no', 20 per cent.

Months Unemployed. Respondents who were early school leavers were asked to report their total unemployment since leaving school. Because we did not specify a reference date and because questionnaires were returned over a four month period, we have adjusted this figure to approximate 'months unemployed up to and including December 1978'. We assume that respondents were reporting total unemployment calculated at the time of completing the questionnaire. Forty-six per cent reported that they had never been unemployed, or had less than a month of unemployment.

Ever Unemployed. This is a dichotomous variable created by collapsing the categories of 'Months Unemployed'. Individuals reporting one month or more of unemployment since leaving school were coded '1' and all others '0'. Forty-six per cent of the early school leavers reported one month or more unemployment since leaving school (non-response accounts for the discrepancy, see Table 4.15).

Attempted Further Study. Question 9 on the school leavers questionnaire is the pertinent measure (see Appendix A). The variable is dichotomous with those indicating any post-school study coded '1', others '0'. Forty-six per cent reported having attempted further study after leaving school.

Plans for Further Study. Those indicating plans for further study in this same compound question were coded '1' and all others '0'. Sixty-four per cent indicated plans for further study.

Sex. This is a teacher-report measure obtained in the 1975 survey. Males are coded '1' and females '2'. Slightly less than 50 per cent of the retained sample are males.

Measures of Rurality

One of the terms of reference requires that we look at the effects of geographical location on educational and occupational attainments. We have allowed for this, in part, by including State as a variable in the model; however, this is a crude measure of geographical location and, in fact, almost certainly reflects school system and economic differences as much as differences due to geography. To address the question more directly we chose to concentrate on a rural/urban interpretation of geographical location for at least the reason that rural youth are thought to be disadvantaged:

> educational disadvantage for children in country areas...includes isolation, non-access to cultural facilities such as theatres, libraries and television, the range and level of local employment and the educational levels and incomes of families. (Schools Commission, 1975: 75)

The Concept. The Schools Commission also points out that no adequate definition of 'country' exists (Schools Commission, 1975: 73), a fact noted elsewhere as a problem of long standing (Willits and Bealer, 1967). Nevertheless, definitions of rurality do exist and tend to focus on three dimensions of the rural-urban continuum: ecological; occupational; and sociocultural.

Ecological definitions tend to rely on spatial and population density measures of rurality such as distance from major centres and city size. Occupational definitions rest on the relative dominance of agricultural and related occupations in the local workforce. Sociocultural definitions draw their distinctions in terms of value and behavioural differences along the lines of the Gemeinschaft-Gesellschaft characterization of social groupings, and related distinctions (for example, folk v. modern, organic solidarity v. mechanical solidarity). Social groupings of the first kind are characterized by traditional values, close personal ties based on friendship and kinship, consensus, and informality. The formal, contractual and impersonal relationships characteristic of modern urban societies with their emphasis on utilitarian goals, competition, and weak family ties define social groupings of the second kind. For further discussion see Schnore (1966), van Es and Brown (1974), and Falk and Pinhey (1978).

While it is convenient to think of a simple rural-urban dichotomy it is not entirely logical. The distinction is not either/or but, rather, one of degree. Individuals come from backgrounds and/or attend schools that are more or less rural (or urban). 'Rurality', the term we choose to use, is seen as a continuous variable. Population and distance from major centres, for example, are continuous variables, and so too is the relative dominance of agricultural occupations in the workforce. And, although phrased as an ideal-type distinction, one could not defend the Gemeinschaft-Gesellschaft distinction as a logical and/or empirical dichotomy. Thus, we see individuals living in major metropolitan areas as having a low degree of rurality, those living in small isolated, country villages as having a high degree of rurality, and those living in the variety of non-metropolitan cities and towns as rural to some intermediate degree.

The Measure. We were able to operationalize these definitions in part to form an index of rurality for individuals and for the schools they attended in 1975. Work in progress by Mr K. Ross has linked 1971 census data at the collector's district level to most of the 6247 individuals in the sample where the collector's district in question contains the 1975 home address of the respondent. He generously made these data available to us.

From the variables available in the census data we selected ten variables thought to approximate the ecological and occupational definitions of rurality and these are detailed in Table 3.3. The pertinence of the two occupational indicators is self-evident. We thought to come close to ecological indicators with the 'type of dwelling' variables and the two 'services' variables, 'TV' and 'sewerage'. The four 'vehicle' variables were seen as potential occupational/ecological indicators, especially the 'three or more vehicles' variable which we predicted would define farms.

To construct a rurality index we factor analyzed the correlation matrix defined by the ten variables, retained factors with eigenvalues greater than one, and rotated the solution using varimax criteria. The results are shown in the first part of Table 3.3. We chose the occupational indicators as the critical ones and thus focussed on the variables which defined the second factor. Some further refinement was undertaken to eliminate multiple indicators not independent of each other and indicators with little variance. Four variables were retained for the final index. These are shown in the second part of Table 3.3 with their principal component loadings and with the factor score coefficients used to produce the index for each individual.

As a result, each member of the sample has a rurality score based on occupational and ecological characteristics of the census collector's district in which his/her home address was located in 1975. Necessarily our indicators are restricted to ecological and occupational characteristics of rurality in which the occupational measures are positively weighted and the ecological measures (TV and sewerage) are negatively weighted. It follows that the most rural of the sample live(d) in areas where a high proportion of the workforce is engaged in agriculture, forestry and fishing, where there is a high proportion of dwellings with three or more vehicles, and where only a small percentage of these dwellings have TV and sewerage. At the other extreme, respondents living in urban areas should show the reverse pattern, and they do. Those living in non-metropolitan centres lie between these extremes for the most part; however, those respondents in major non-metropolitan centres such as Wollongong in NSW, Geelong in Vic. and Whyalla in SA receive scores similar to those living in the Metropolitan centres for obvious reasons.

We take this index for each respondent as a measure of the relative degree of rurality of his family of origin. Our explanation for any effects of family rurality on subsequent educational and occupational attainments, and hence our justification for including this construct within the model relies on notions of: ecological disadvantage arising from isolation and lack of access to cultural facilities; occupational

Table 3.3 **Factor Analyses Used to Produce Family and School Rurality Indices**

Collectors District Variables 1971 Census	Ten Variable Solution - Varimax Rotation			Four Variable Solution	Standarized Factor Score Coefficients
% Workforce in Agriculture, Forestry, Fishing	[a]	0.86	[a]	0.90	0.43
% Workforce in Manufacturing	[a]	-0.50	[a]		
% Dwellings: Separate Houses	0.77	[a]	[a]		
% Dwellings: Self Contained Flats	-0.63	[a]	[a]		
% Dwellings: Television	0.52	-0.32	[a]	-0.31	-0.15
% Dwellings: Sewerage	[a]	-0.50	[a]	-0.68	-0.33
% Dwellings: No Vehicles	-0.89	[a]	[a]		
% Dwellings: One Vehicle	[a]	-0.32	0.84		
% Dwellings: Two Vehicles	0.78	[a]	-0.51		
% Dwellings: Three or more vehicles	[a]	0.78	-0.33	0.84	0.41
Proportion of Total Variance Explained	0.28	0.22	0.12	0.52	

[a] indicates factors loading less than 0.3.

disadvantage arising from the restricted occupational models and job opportunities in rural areas; and 'disadvantage', from the point of view of attainment in an essentially urban society, that accrues from socialization within a Gemeinschaft milieu.

It is important to keep in mind that we were not constructing the 'ideal' index of rurality but, instead, working from available data. The construction of such an index is a major research project in itself. Thus, while we realize that our rurality index is limited in its coverage of all the relevant dimensions of rurality the point is that we have a measure that taps the underlying construct where no such measures currently exist. The fact that the indicators are primarily occupational is more of a strength than a weakness; the most rural families are those with many of their neighbours engaged in agriculture, forestry or fishing, while the most urban live in areas where few people engage in these rural occupations.

School Rurality. We have developed, in addition, an index of school rurality in the form of the average of the family rurality scores of respondents within each school. Twenty-five students were sampled from each school in 1975 but non-response and other sources of missing data have reduced this to an average of 22.

The meaning of this index needs careful consideration. In effect we are measuring the rurality of the student population within the school in a way analogous to the somewhat more common measures of socioeconomic and intellectual composition used in 'structural effects' analyses; see for example Davis (1966), Farkas (1974), and Hauser (1974). Thus, by including this variable within the model we are able to examine the effects of the degree of rurality of a respondent's school peers on his/her subsequent attainments.

However, we would like to be able to attribute more than just a compositional effect to this variable. Ideally, we want to use the index as a measure of the degree of rurality of the school, and the education it provides, in order to examine the supposed disadvantaging effects of a rural education. Rural schools are seen as disadvantaged by isolation, in terms of the facilities and curriculum options they can provide for their students, and in terms of the staff and other resources they can command. Various programs of compensatory funding have been provided in an attempt to overcome this.

In an attempt to evaluate the validity of this indicator of school rurality, schools in our sample and their rurality scores were plotted on a map of each State. These are shown in Appendix E. A high score indicates a highly rural school. The index does not discriminate well within urban areas, and this is not surprising; there is little variation within these areas in the indicators used. Consequently, for the purposes of producing these maps school rurality scores for major cities are calculated as the mean score for all schools located in each city. The cities in question and the number of schools are as follows: in NSW, Sydney (23), Newcastle (2); in Qld, Brisbane (14); Rockhampton (2), Ipswich (2), Toowoomba (2), in Vic., Melbourne (25), Wangaratta (2); in SA, Adelaide (24), Elizabeth (2); in WA, Perth (27), Geraldton (2); in Tas., Hobart (13), Launceston (8), Devonport (2), Burnie (3). In the actual analyses, each school retained its own score; that is, these 'city' scores were not averaged.

In interpreting these data it is important to keep in mind that the rurality score is assigned to a school rather than the town, though obviously we expect a degree of correspondence overall. Except in the cases noted above, only one school in each town was part of the sample. By chance the school selected in a particular town may be central or it may be on the perimeter and so draw on a different population of students. Thus, a fairly urban centre might appear to be more rural than one would expect simply because one of the outer perimeter schools was chosen. Also, because we produced average scores for the large cities we have tended to increase their rurality score by including 'rural' fringe schools in this average. As a result, some non-Metropolitan centres appear to be more urban than the major metropolitan areas. This is further confounded by differences in the student populations of schools that occur for other reasons; for example, an elite independent girls school in the Perth metropolitan area was assigned a score indicating a fairly rural school. The explanation, of course, is that the school has a high proportion of students from country areas.

Thus, the index is not without problems but, overall, it seems to work reasonably well and to have acceptable face validity. The major cities have low scores overall though Perth scores somewhat higher than one might expect; however, WA is a rural state and the ordering of the schools within the State is consistent with what we would expect. At the other extreme, schools in obviously rural towns receive high scores on the index; Derby (WA) = 2.077, Deloraine (Tas.) = 2.914, Yorketown (SA) = 3.249, Balmoral (Vic.) = 3.611, Herberton (Qld) = 2.680. Moreover, major non-Metropolitan centres have rurality scores similar to and in many cases lower than the capital cities: Wollongong (NSW) = .270; Toowoomba (Qld) = .465; Wodonga (Vic.) = .431; Whyalla (SA) = .173.

What Do We Want to Know?

What we have assumed in developing the model that guides the Study of School Leavers is that the influences on educational achievement and on occupational status attainment during the transition and early career are many: the state of the economy; the type of school attended; an individual's own capabilities; where he/she lives; the character of his/her family; and so on. What we would like to know is the manner and magnitude of each influence holding constant the effect of all the others. Take the potential influences of a rural background as an example. We would like to know, first, how the degree of rurality of one's family affects early status attainment. Are there direct effects on these early attainments which mean, ceteris paribus, that growing up in rural areas affects one's attainments irrespective of whatever differences in State, school, socioeconomic background, and the other variables noted in Figure 2.1 are associated with where one lives? In addition, we would like to know whether there are indirect effects of family rurality; other things equal, are the attainments of rural youth affected because rurality affects the nature of the education they get and, through this, status attainment in the early career? As well as knowing how, we would also like to know how much; for instance, how important is a rural education for subsequent attainments, and how important is it compared with the effect of sex, or that due to school system attended, or parental education, or the several other influences noted in the model?

Ceteris Paribus

Given that there is a sizeable number of factors affecting attainment we need to examine the effects of each influence one by one holding constant the effects of the other variables in the model in order that the influences of several variables are not confounded. In short, we need to have 'other things equal' when talking about, for example, the effect of literacy on unemployment, or the effect of family size on achievement, or the effect that a non-Government school education has on one's degree of literacy and numeracy. Such effects are often called 'net effects' because they are 'net of' the confounding influence of the other variables in question.

The effect of a non-Government school education is a particularly appropriate example to deal with in detail. On the average, students attending independent schools do better on all the usual measures of educational attainment. There is a tendency to attribute these differences to differences in the nature of the education provided and, while this may be true, we have no way of knowing with just this information because independent schools recruit from the upper socioeconomic levels in the population and we know that family socioeconomic status affects achievement for a variety of reasons. It could well be that those observed school system differences simply reflect average socioeconomic differences between the school system populations. Thus, in this simplified example what we need to do is control for the confounding effect of socioeconomic status in order to examine the net effect of school system. One way of doing this is to compare individuals of the same socioeconomic status across the three school systems; that is, control for the confounding effects of student socioeconomic background. If their average achievement still differs then, in this simple model, we might attribute the difference to some kind of difference between the systems, perhaps the nature of the education provided. (Obviously, it is not due to socioeconomic differences between the groups of students compared.) In short, we could say that, other things equal (socioeconomic background only, in this case) there are school system effects on attainments. We could calculate socioeconomic background effects net of school system effects in much the same way.

If we could elaborate this simple model to deal with the effects of State, school, family and sex on school achievement as postulated in Figure 2.1 then we could proceed as follows. Family size, for instance, is related to many of the other variables in blocks 1 through 4; thus, if we want to examine its unique influence on achievement we would have to look at its effects with these other influences controlled. In essence, we would be asking whether differences in achievement accompany differences in family size among respondents living in the same State, attending the same school system, attending schools with the same level of rurality, from the same family background and ethnic group, and of the same sex. To estimate the unique (net) effects of these other variables on achievement the same process would be repeated as many times as there are variables.

One sometimes meets the objection that 'other things are not equal'. This is true, of course, and is the point of the whole exercise. We can even show just how unequal things are by showing how advantageous it is to have various combinations of levels on these variables simply by adding together their net effects. Thus, we could look at the relative advantage of being born female in a high socioeconomic status family in South Australia and attending an independent school.

Structural and Statistical Models

Thinking in terms of the effect of a variable, other things equal, raises the question of the exact nature of the 'other things'; which variables should be controlled, and why. The answer is dictated by one's theory or model. The variables to be controlled are the other theoretically defined 'causes' of the phenomenon of interest, and they must be controlled because the model postulates that their effects will confound those of the variable of immediate interest. A theoretical justification must be advanced for each variable controlled if we are to make sense of the statistics produced, and this justification can be captured in the form of an explicit causal model:

> if...we choose a group of social phenomena with no antecedent knowledge of the causation or absence of causation among them, then the calculation of correlation coefficients, total or partial, will not advance us a step toward evaluating the importance of the causes at work...In no case...can we judge whether or not it is profitable to eliminate a certain variate unless we know, or are willing to assume, a qualitative scheme of causation. (Fisher, 1946: 190-191)

In short, to give meaning to the patterns of statistical relationships we observe in our data we must postulate an underlying, theoretically-derived structure of social processes thought to give rise to these observed relationships among measured variables. Figure 2.1 details the structural model we have developed to explain status attainment in the transition and early career of school leavers. It is this model which defines the 'other things' that must be held 'equal', the other causes of the phenomenon of interest.

The fundamental distinction between explanation and prediction has the same origins. The model also prescribes which variables one may use in concert to explain, statistically, variation in this same phenomenon. For example, the logic of the structural model shown in Figure 2.1 dictates that individual differences in the school achievement variables of block 5 are explained by a statistical model that includes only variables from blocks 1 through 4. By contrast, a purely statistical model would probably include the variables in blocks 6 and 7 as well and would account for more of the variance in the achievement variables and thus offer a better prediction equation for achievement scores. The point, of course, is that the statistical model implied by the structural model leads to substantive interpretations; it makes sense to think of 'family effects', other things equal, when the 'other things' are other postulated causes of achievement. It makes little sense to interpret family effects on achievement, other things equal, when the other things are a mixture of the causes and the effects of achievement. We use Duncan's (1975:6) comment to summarize this point:

> One can do a passably good job (of prediction) without knowing much about the subject matter...one cannot even get started (on explanation) without a firm grasp of the relevant scientific theory, because the starting point is, precisely, the model and not the statistical methods.

Structural Equation Models

A structural equation model is one in which the patterns of relationships postulated in a structural model are expressed as a system of equations. Social science research using structural equation models has developed rapidly over the past ten years and Bielby and Hauser (1977) provide a detailed review. The term subsumes a variety of techniques with one of the best known being 'path analysis' (Wright, 1934). Three characteristics are basic. First, the models are used typically with non-experimental data, though they are not limited to this (see, for example, Alwin and Tessler, 1974). Second, the models postulate hypothetical constructs. And, 'A third common element relates to systems: the models are typically built up of several or many equations which interact together' (Goldberger, 1973:1).

It is clear that our data are non-experimental, and that we postulate constructs such as family rurality (but do not attempt at this point to deal with measurement models involving latent variables and their indicators). And, we postulate a system of structural equations to explain the variation in, and covariation among, educational and occupational attainments. We can present these equations in summary form by considering the seven blocks of variables noted, in the first instance, rather than individual variables. Thus, we can capture our model for the early career of school leavers with three summary equations.

$$\text{SCH.ACH.}=c_1\text{STATE}+c_2\text{SCHOOL}+c_3\text{FAMILY}+c_4\text{SEX}+\text{error}$$

$$\text{SCH.ATT.}=c_5\text{STATE}+c_6\text{SCHOOL}+c_7\text{FAMILY}+c_8\text{SEX}+c_9\text{SCH.ACH.}+\text{error}$$

$$\text{OCC.ATT.}=c_{10}\text{STATE}+c_{11}\text{SCHOOL}+c_{12}\text{FAMILY}+c_{13}\text{SEX}+c_{14}\text{SCH.ACH.}+c_{15}\text{SCH.ATT.}+\text{error}$$

These equations mirror our theoretical considerations which postulate: first, that school achievement (SCH.ACH.) is affected by State of residence (STATE), school (SCHOOL) and family (FAMILY) characteristics and whether the respondent is male or female (SEX); second, that school attainment (SCH.ATT.) is affected by all of these variables; and third, that a variety of occupational attainments in the early career of school leavers (OCC.ATT.) are dependent on all of the preceeding ascribed and achieved characteristics in blocks 1 through 6.

The error terms are unspecified effects on school achievement, educational attainment and occupational attainments arising from outside the system and assumed unrelated to the other causes of the dependent variable with which they are associated. They represent variation in SCH.ACH. SCH.ATT. and OCC.ATT. unaccounted for by the causes specified within the system and are termed variously 'residuals', 'random shocks', or 'errors in equations'.

The c_i are the structural coefficients to be estimated within a statistical model. They represent the net effects of each variable, other things equal. For example, c_3 represents the net effect of family influences on achievement, other things (STATE, SCHOOL, SEX) equal.

The structural equations usually take a more algebraic form and, using the block numbers shown in Figure 2.1 they could be written as follows:

$$X_5 = b_{51}X_1 + b_{52}X_2 + b_{53}X_3 + b_{54}X_4 + b_{5u}X_u$$

$$X_6 = b_{61}X_1 + b_{62}X_2 + b_{63}X_3 + b_{64}X_4 + b_{65}X_5 + b_{6v}X_v$$

$$X_7 = b_{71}X_1 + b_{72}X_2 + b_{73}X_3 + b_{74}X_4 + b_{75}X_5 + b_{76}X_6 + b_{7w}X_w$$

In this case: the X_i are the variables in the model; X_u, X_v and X_w are the error terms; X_5, X_6 and X_7 are the dependent variables for the three equations; and the b_{ij} are the structural coefficients where 'i' is the effect and 'j' the cause - for example, b_{53} represents the effect of X_3 on X_5, other things equal.

Statistical Models

For the purposes of this report we take the simplest statistical model appropriate and estimate the structural coefficients as partial regression coefficients using ordinary least squares regression procedures. Thus, b_{53} noted above is in reality $b_{53.124}$, the partial regression of X_5 and X_3 controlling X_1, X_2 and X_4. The structural coefficients for the error terms - b_{5u}, b_{6v} and b_{7w} - are estimated as the square root of the proportion of unexplained variance, $1-R^2$, in each equation.

In each case we use 'missing-data' correlation routines which calculate correlations on all cases in which there are paired data. Thus, the correlations are based on somewhat different numbers of cases. We see this as a problem only in the case of 'expected job in 5 years' where non-response exceeded 30 per cent.

Interpretation of Structural Coefficients. The basic interpretation is straightforward. Take the coefficient $b_{53.124}$ noted above. Its interpretation is, other things equal (X_1,X_2,X_4), a one-unit difference among individuals in X_3 is associated with a 'b'-unit difference among these same individuals in X_5. Assume that $b_{53.124}$ was estimated as 0.3. This coefficient could be interpreted as, among individuals at the same level on X_1, X_2 and X_4 (in the same State, attending similar schools, and of the same sex), a one-unit difference in family characteristics (X_3) is associated with a 0.3-unit difference in achievement (X_5).

Metric and Standardized Coefficients. Two forms of the structural coefficients are used for somewhat different, though complementary purposes (Wright, 1960). The difference between these coefficients is a difference in the units of measurement. With metric coefficients the original units of measurement are retained. Thus, if we were to estimate $b_{76.54321}$ as -0.2, where X_7 was unemployment measured in months and X_6 was years of schooling, we could interpret the metric coefficient as, other things equal, each extra year of schooling is associated with 0.2 months less unemployment. Metric coefficients provide concrete interpretations of this kind but suffer from the limitation that one cannot (usually) compare them with other coefficients in the same equation to estimate the relative importance of several causes, because of the different measurement scales involved - to use a time-honoured phrase, one would be comparing apples and oranges.

To talk of relative effects one needs to interpret the standardized coefficients in which all the units of measurement are standard deviations. The interpretation then is that if $b_{76.54321}$ was -0.01 for example, other things equal, a one standard deviation unit difference in X_6 is associated with a -0.01 standard deviation unit difference in X_7. (It is possible also to adjust the coefficients to include standardized and metric scales in the one coefficient if it is meaningful to do so; for example, other things equal, a one-standard-deviation difference in years of schooling is associated with 'n' months of unemployment.)

One general caution not always heeded needs comment. One cannot compare metric coefficients within equations to talk about relative effects because of the different measurement scales involved; standardized coefficients must be used. And, one cannot compare standardized coefficients between equations or across groups because the standard deviations are likely to vary; metric coefficients must be used. Specht and Warren (1976) provide a more detailed discussion of these issues.

Association and Effect. Statistically the structural coefficients are measures of association and in the discussion so far we have talked of them in this way. However, we would like to infer more than mere association, as our structural model suggests. We would like to infer cause and effect such that a structural coefficient represents the net effect of one variable upon another. In short, we would interpret $b_{76.12345}$ - the partial association between educational and occupational attainments - as, other things equal, the amount of schooling one gets affects how well one does in the workplace. There is no logical way to make this inferential leap (see Blalock, 1968) but it is important - probably necessary - to do so for at least the following reason. We are providing theoretical/substantive interpretations of statistics, and the language of theory is the language of cause and effect (in contrast to the language of statistical models which is the language of probability). In short, we need to move back into the realm of theory to be able to provide meaningful interpretations of the structural coefficients estimated by the statistical model. Dubin (1969) provides an illustration of the trouble one gets into trying to talk theoretically in the language of statistics. Besides, causal thinking is so much a part of our thought processes and language that, even if we did talk about measures of association, they would be interpreted explicitly or implicitly as measures of effect; it is simply not meaningful or useful to think about social processes in other ways. Blalock (1964) and Blalock and Blalock (1968) discuss these issues in detail and review the pertinent literature.

Assumptions and Limitations

Five categories of assumptions cover most of the potential problems concerning the tenability of our conclusions. First, we assume that our model contains all of the important causes of educational and occupational attainments, and that these variables are in their appropriate functional form. This is the issue of model specification (see, for example, Heise, 1969). To the extent that we have not achieved this state, then our estimates are in error.

Second, we have addressed already the question of response bias. Our achieved sample most likely does not quite capture the cohort of individuals in question, with the least educated and least employable respondents being underrepresented. However, our analyses seem to show that this underrepresentation is fairly minor in extent and, thus, we feel reasonably confident that we are talking about the total cohort of youth in the age group specified.

Third, we have not considered the question of measurement error but have assumed perfectly reliable measures. Obviously, this is an unlikely assumption with the result that measurement error will attenuate the relationships shown and conclusions will err in a conservative direction. However, the problem becomes more serious if we have differential measurement error such that one relationship is attenuated more than another with the likelihood that differences in measurement error will be interpreted as differences in effect. There was no feasible way we could design a measurement model into this phase of the study and attain a good response. However, we plan to examine these measurement issues when subsequent questionnaire data are collected.

Fourth, in many cases our data do not meet the statistical requirements needed to satisfy the assumptions of multiple regression by ordinary least squares. While most of the measures approximate interval scales or are dichotomous, the measures of parental education and satisfaction with first job are clearly ordinal. The use of dichotomous variables as dependent variables is somewhat problematic and in the case of mastery scores for Literacy and Numeracy the marginal distribution approaches unacceptable limits (see Goldberger, 1964). Moreover, in some cases the variables are not normally distributed. The literacy and numeracy tests show ceiling effects, 'family size', 'time to first job', 'months unemployed' are positively skewed, as one would expect, and it is doubtful whether we met the homoscedasticity assumption. Multicollinearity, which is always a matter of degree, seems not to be a serious problem. Most correlations are of the order of 0.3 or less, though assortative mating on parental education produces a correlation of .55, the highest in our data. However, the statistical techniques we have adopted are relatively robust in the face of all except extreme departures from the norm (Labovitz, 1967; 1970; Zeller and Levine, 1974; Kerlinger and Pedhazur, 1973:48; O'Brien, 1979) with the result that we would argue for our estimates as reasonable approximations.

Fifth, we have assumed a simple additive model that says, in effect, that the social processes governing status attainment are the same for all individuals in the population of interest. Thus, although we might observe mean differences in months of employment between males and females or rural and urban youth, other things equal, each year of education that females get is assumed to return them just as much employment as it does for males. The more complex nonadditive (interactive) models postulate that some or all of the social processes implicated in status attainment are different in different subpopulation groups. Thus, mean differences in months of employment between rural and urban youth could result from the fact that, other things equal, each year of education for rural youth returns fewer months of employment than a year of education for urban youth, perhaps because the restricted opportunities or other phenomena we might speculate about. If this is true, an additive model probably disguises these differences as average effects. In this situation data on each group ought to be analyzed separately because the social processes we are measuring operate differently in each group. This is really another aspect of model specification and to the extent that an additive model is inappropriate our conclusions will be compromised.

We have restricted this report to an examination of an additive model for four nonadditive reasons. First, an additive model provides the simplest overall picture of the processes in question, albeit at the possible expense of averaging out whatever group differences may exist. Second, we wish to keep this first report to a manageable size; considering just sex differences, for example, multiplies the interpretation by at least a factor of three (description of each group, plus a comparison). Third, we are concerned that policy research of this kind reach its audience when needed, even if results are only partial. Fourth, this is the first in a series of reports; a consideration of subpopulation group differences will be the substance of a later report. Just as we attempted to optimize the design of this phase of the study, we also attempt to balance the competing requirements of this first report.

Informing Policy Decisions

We are prepared to live with these potential limitations for the time being. They are common to most of the research we have seen, though they are not always made explicit. Our over-riding concern has been one of providing social fact on a contentious social issue, fact not only about the size of the problem but, more importantly, about the social processes characteristic of the transition from school to work among early school leavers. Moreover, we have been concerned that we provide this information in time to inform whatever policy decisions may be made. We have not had the time to explore our data as thoroughly as we would like nor have we been able to link our findings to the Australian literature on this subject as much as we would like. Later reports will contain a more thorough treatment of these issues. Nevertheless, the comprehensiveness of our theoretical model and the robustness of the statistical model give us confidence in our conclusions. While the exact size of the statistics may be in error, we are certain that the overall conclusions will withstand a more elaborate statistical treatment essentially unaltered.

There is one further point. The particular statistics used may be unfamiliar to many readers and it is for this reason that we have explained them and illustrated their meaning and interpretation with examples. Policy research addresses complex issues and requires that relatively complex statistical techniques be applied. For the most part it is just not possible - and is probably misleading - to address these issues with simple cross-tabular presentations of data. While these might be readily comprehended by most readers without a great deal of effort, their interpretation is so equivocal that their information value is limited.

CHAPTER 4

STAYING AND LEAVING

In this chapter we report the first of our analyses employing structural and statistical models to formalize and quantify hypothesized social processes. The social processes in question at this point are those that influence, first, achievement in basic skills within school and, second, whether students become early school leavers or stay on to the final years of high school. Concerns expressed in points 3 and 5 of the terms of reference are addressed in this way. Following these analyses we provide descriptive data on stayers and leavers from the survey questionnaires administered in the summer of 1978-79.

The Model

The model guiding these analyses has a form similar to that of Figure 2.1 and is shown in summary form in Figure 4.1 below. We postulate effects on school achievement (Word Knowledge, Literacy, and Numeracy) from the several State, school, and family variables noted in Figure 2.1, and from the respondent's sex. All of these ascribed and achieved characteristics are seen as potential influences on the respondent's educational status in 1978; that is, whether he/she is an early school leaver or still in school. In short, we examine some of the causes of achievement in school and of early school leaving.

We have specified a two-stage model with school achievement as an intervening variable and, hence, have estimated two sets of equations, one set linking the background variables to achievement (three equations), and the other a single equation

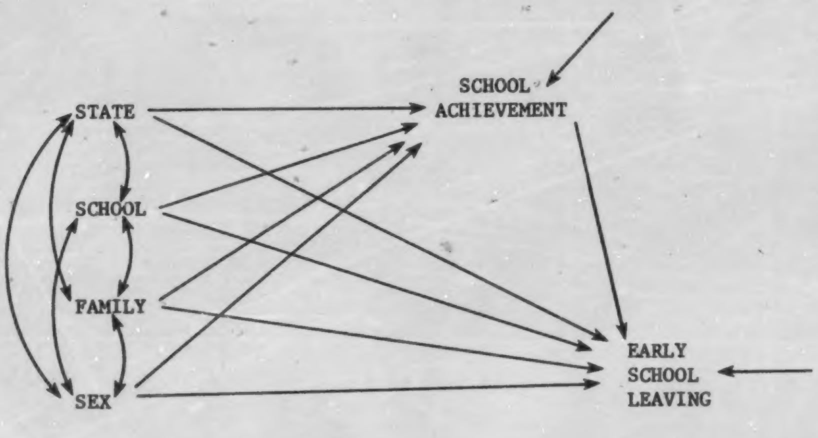

Figure 4.1 The Stayer/Leaver Model

linking the background variables plus the three achievement measures to staying in school. The equations predicting the three measures of achievement provide information about State, school, family and sex effects (at age 14) for the total group and allow us to say something about the causes of variation in these achievements. With this information and that from the equation linking these variables to staying at school we can offer observations on the relative roles of ascription and achievement in educational attainment and so comment on the extent to which education within Australia operates according to the so-called meritocratic model, or is consistent with a revisionist model (cf. Rehberg and Rosenthal, 1978).

The distinction between these explanatory models is straight-forward. Revisionist models argue that students' educational achievement and progress through school are strongly influenced by their social origins; other things equal, individuals from more advantaged families do better in school. These models go further and argue that, because social and economic statuses in one generation are linked to those of the next, principally via educational attainments (qualifications, years of schooling), this is one mechanism assisting the inheritance of social and economic inequality. This argument represents a major theme for those who argue that schools maintain the class structure; for example, Sexton (1961), Katz (1971), Bowles and Gintis (1973) and Carnoy (1974). Models postulating various kinds of discrimination are the clearest examples of this and argue that, among individuals of equal achievement, ascribed characteristics (ethnicity, sex, social origins, for example) continue to affect educational attainment independently of their effects on achievement; persons of equal achievement tend not to have equal attainments.

In contrast meritocratic models argue that schools provide equality of educational opportunity and that individual differences in educational achievements and attainments are largely a function of individual differences in merit - ability, motivation and application, for example. Thus, while individual differences in characteristics ascribed by location, school, family and sex in the present model may affect attainment (years of schooling completed), they do so only because they influence achievement; persons of equal achievement tend to have similar attainments. This argument is common in the literature on status attainment models where it finds consistent empirical support; see, for example, Sewell and Hauser (1975).

In terms of the relationships shown in Figure 4.1, this distinction has the following implications: if meritocratic arguments hold there will be only small direct effects of State, school, family, and sex on staying in school; and if revisionist arguments are to be supported some or all of these direct effects will be present and substantial.

Four Structural Equations

The system of relationships hypothesized in the model can be captured in four structural equations, as follows.

$$\text{WORD.KNOW} = c_1\text{STATE} + c_2\text{SCHOOL} + c_3\text{FAMILY} + c_4\text{SEX} + \text{error term} \qquad 4.1$$

$$\text{LITERACY} = d_1\text{STATE} + d_2\text{SCHOOL} + d_3\text{FAMILY} + d_4\text{SEX} + \text{error term} \qquad 4.2$$

$$\text{NUMERACY} = e_1\text{STATE} + e_2\text{SCHOOL} + e_3\text{FAMILY} + e_4\text{SEX} + \text{error term} \qquad 4.3$$

$$\text{STAY.SCH.} = f_1\text{STATE} + f_2\text{SCHOOL} + f_3\text{FAMILY} + f_4\text{SEX} + f_5\text{WORD.KNOW.} + f_6\text{LIT.} + f_7\text{NUM.} + \text{error term} \qquad 4.4$$

Equation 4.1 says that individual differences in Word Knowledge scores can be attributed, in part, to the effects of State of residence (STATE), differences between schools (SCHOOL), the influence of a variety of family background factors (FAMILY), and to sex differences (SEX). Some part of these differences, however, is attributable to other influences not specified here and these are contained in the error term. Equations 4.2 and 4.3 have analogous interpretations. Equation 4.4 attributes individual differences in early school leaving to these same set of background factors plus individual differences in achievement (WORD.KNOW., LIT., NUM.), and to unspecified influences captured in the error term. We do not assume that each influence operates with the same strength; obviously, some are likely to be more important than others. To allow for this we include measures of effect for each independent variable in the equation, and for the error term. These are the c_i, d_i, e_i and f_i in equations 4.1 to 4.4, and it is these that we estimate from the observed relationships within our data.

STATE, SCHOOL, and FAMILY are the summary variable categories shown in Figure 2.1 and represent a total of seventeen variables in all. The c_i, d_i, e_i, and f_i are the structural coefficients to be estimated, one for each independent variable in each equation. They are estimated as partial regression coefficients and each is interpreted as a measure of the net effect of the independent variable with which it is associated in the equation.

The three measures of school achievement (Word Knowledge, Literacy, and Numeracy) which are the dependent variables in equations 4.1 to 4.3 are measured as noted in Chapter 2. In equation 4.4 the dependent variable STAY.SCH. is a dichotomy in which early school leavers constitute one of the categories, and those who were full-time students in 1978 make up the other. The structural coefficients from this equation allow us to infer something about those who stay to the final years of high school, and those who leave early, no matter when.

The structural coefficients estimated are shown in Table 4.1 and are based on weighted data from all 4919 respondents. Each column represents an equation. The dependent variable is noted at the top of the column, and the independent variables define the rows. The upper panel of the table shows these coefficients in their metric form for all variables in each equation. In the lower panel those standardized coefficients with useful interpretations are shown. They are, of course, still net of the influences due to State, school system, and ethnicity. We show in addition the proportion of variance explained by each equation.

The standard errors of the coefficients have been adjusted to allow for design effects resulting from the cluster sampling. Similar sampling in another study produced values of the square root of the design effect for partial regression coefficients equal to 1.16 (Ross, 1978:143) and we have adopted this figure as a reasonable estimate. Thus, the standard errors of the coefficients have been multiplied by 1.16 to take this into account. Each non-italicised coefficient shown in Table 4.1 exceeds twice its adjusted standard error. Coefficients less reliably different from zero are shown in italics. With a sample size of 4919 all except very small coefficients achieve statistical signficance at the level of confidence we have chosen - a little less than the traditional five per cent level. We have shown all the coefficients to provide complete information and because this statistical decision rule often discriminates between coefficients not very different in size, conferring a degree of apparent legitimacy on one and not on the other. Thus, at times we may want to consider coefficients not reaching significance at this level but this is somewhat unlikely given our sample size. What is more likely is that some statistically significant coefficients will seem practically non-significant and, as a result, we will assign meaning only to a subset of the statistically significant effects. When an effect becomes worth considering is a matter of judgement in the main. By providing the complete set of coefficients with associated significance levels achieved we allow the reader to check our judgements.

Influences on Achievement

State Effects

As in the case of all effects detailed in the following tables, the effects of State of residence are shown 'other things equal'; that is, net of all other specified influences on the outcome in question - in this case, each of three measures of achievement. For reasons of statistical convenience we show these effects in Table 4.1 as the effect of being in State 'X' relative to being in NSW, other things equal. However, to facilitate comparisons across the States, these State effects are shown in another form in Table 4.2, as net adjustments to the grand mean of each achievement measure. In this case, the effects are interpreted as increments or decrements to achievement that accrue from living in one State rather than another, other things equal. In the section

Table 4.1 State, School, Family, Sex and Achievement Effects for the Stayer/Leaver Model

Dependent Variables	Word Knowledge	Literacy	Numeracy	Staying in School
Independent Variables		Metric Coefficients[a]		
ACT	*2.38*	*0.66*	*0.68*	0.22
Vic.	*-0.66*	*0.12*	*-0.49*	*0.04*
Qld	*0.87*	0.61	1.70	-0.09
SA	*1.10*	*0.58*	*0.34*	-0.10
WA	*1.22*	*0.08*	*-0.64*	*-0.07*
Tas.	*0.35*	*0.05*	*-0.61*	-0.13
NT	-5.13	-4.15	-7.01	*0.09*
School Rurality	*0.01*	*-0.25*	*-0.47*	*-0.02*
Catholic School	2.98	1.14	*0.62*	*0.11*
Independent School	3.67	1.28	1.57	0.18
English-Born	*0.20*	*-0.24*	*-0.27*	*-0.04*
Non-English-Born	-1.83	-1.09	-0.71	0.18
Family Rurality	*-0.11*	*0.10*	*0.11*	*0.00*
Family Size	-0.39	-0.25	-0.28	*-0.01*
Father's Occupation[b]	*1.12*	0.41	0.66	0.07
Father's Education	0.51	0.29	*0.14*	*0.00*
Mother's Education	*0.36*	*0.23*	0.32	*-0.02*
Respondent's Sex	*0.36*	0.42	*-0.29*	*0.03*
Word Knowledge				0.01
Literacy				0.01
Numeracy				0.01
		Standardized Coefficients		
School Rurality	*0.00*	*-0.04*	-0.06	*-0.03*
Family Rurality	*-0.01*	*0.03*	*0.02*	*0.01*
Family Size	-0.09	-0.13	-0.10	*-0.03*
Father's Occupation	*0.15*	0.12	0.14	0.16
Father's Education	0.06	0.07	*0.03*	*0.00*
Mother's Education	*0.04*	0.05	0.05	*0.03*
Respondent's Sex	*0.02*	0.06	*-0.03*	*0.03*
Word Knowledge				0.15
Literacy				0.06
Numeracy				0.12
Proportion of Variance Explained	0.12	0.12	0.10	0.20

Notes: [a] Coefficients in italics are less than twice their respective standard errors

Coefficients not in italics are greater than or equal to twice their respective standard errors

[b] All metric coefficients for father's occupation have been multiplied by 100

Table 4.2 State, School and Ethnicity Effects Expressed as Adjusted Deviations from the Grand Mean

Dependent Variables	Word Knowledge	Literacy	Numeracy	Staying in School
Independent Variables		Net State Effects		
ACT	2.24	0.51	0.66	0.24
NSW	-0.14	-0.15	-0.02	0.02
Vic.	-0.80	-0.03	-0.51	0.06
Qld	0.73	0.46	1.68	-0.07
SA	0.96	0.43	0.32	-0.08
WA	1.08	-0.07	-0.66	-0.05
Tas.	0.21	-0.10	-0.63	-0.11
NT	-5.27	-4.30	-7.03	0.11
		Net School System Effects		
Government	-0.70	-0.26	-0.20	-0.03
Catholic	2.28	0.88	0.42	0.08
Independent	2.97	1.02	1.37	0.15
		Net Ethnicity Effects		
Australian-born	0.27	0.20	0.14	-0.02
English-born	0.47	-0.04	-0.13	-0.06
Non-English-born	-1.56	-0.89	-0.57	0.16

immediately following we interpret both sets of State effects to illustrate the kinds of interpretations possible. Subsequent interpretations focus on State effects expressed as deviations from the grand mean because of the clearer interpretation they allow.

Overall, State differences in these achievements appear minor with the exception of NT. Other things equal: students in SA and WA score a little more than one point higher on Word Knowledge on the average than do those in NSW; those in Qld and SA do a little better on the Literacy test, about 0.6 of a point on the average; and Qld students show their traditional advantage in numerical skills (cf. Radford, 1950) scoring 1.7 points higher on the average than those in NSW. The consistent disadvantage of NT students needs careful interpretation. They constitute the smallest component of the sample, have the highest non-response rate and represent a population markedly different from that in the other States. While we might be inclined to attribute some part of the observed State effects to differences between State educational systems - in curricular emphases, for example - where the other States and ACT are concerned, we are unwilling to do this for the NT. We would guess that unmeasured population differences lie at the root of these effects rather than educational system differences. For this reason we omit further interpretation of NT coefficients.

In Table 4.2 State effects, along with those for school system and ethnicity, are shown as adjusted deviations from the grand mean. Where Word Knowledge is concerned we can see that, other things equal, the State one lives in adds at most 2.24 to the average score of students in the ACT and, at least, subtracts 0.80 from the average score of Vic. students. Other things equal, ACT students do best in Word Knowledge, and Vic. students do marginally worst. Similar interpretations are possible for Literacy and Numeracy although the rank ordering of the States varies. These State effects parallel those reported in earlier analyses even though the underlying models differ somewhat; see Bourke and Keeves (1977:252).

An unequivocal explanation of these net State differences is not possible. While our data demonstrate that, other things equal, State differences do exist, they do not allow us to explain why these differences occur. The fact that the 'other things' equal are only the 'other things' specified in the model, and not all other things, means that we cannot reject the possibility of unmeasured population differences between the States being at the root of these observed average achievement differences. Nevertheless, we have measured a variety of important population characteristics likely to vary between States and with demonstrated effects on achievement and, by so doing, have reduced the likelihood that these State effects are due to State differences in the characteristics of families and students. A more obvious, though not more certain, explanation is that the effects are due to system differences in educational practice. In the case of the Numeracy advantage shown by Qld students this may be so; it has been pointed out that Qld students spend relatively more time on mathematics than do students in other States (Keeves, 1968; Rosier, in press) and the effects of 'time on task' on achievement are well known (Rosenshine, 1979).

In short, while these analyses increase our certainty that State differences in average levels of achievement unrelated to State population differences do occur, in the absence of pertinent data we are unwilling to attribute these differences to State system differences in educational practice. This may be so, but we are unable to tell from our data. Thus, we do not recommend, for example, that mathematically inclined students move to Qld. Our findings are more consistent with a recommendation that, given these State differences in achievement (other things equal), we attempt to find out whether State differences in educational practice and/or provision are the root cause.

School Effects

School Rurality. The effects of this variable shown in Table 4.1 are minor. Other things equal, rural schools - as we have defined rural schools - do not disadvantage their students significantly in either verbal or numerical skills. The school rurality index has a range of 3.6 points; thus, students in schools at the extremes - the most urban and most rural schools - differ on the average by 0.04 points in Word Knowledge (3.6 x 0.01), 0.9 points in Literacy (-0.25 x 3.6) and 1.7 points in Numeracy (-0.47 x 3.6). Since there is no natural metric for the rurality variable it may be helpful also to examine the meaning of the standardized coefficient in the lower panel of Table 4.1. Taking the largest effect as an example, other things equal, students who differ by one standard deviation in the rurality of their school, also differ by an average of 0.06 standard deviations in the mean Numeracy score (a little more than 0.3 of a point), in favour of the more urban schools. Thus, we see little evidence that achievement in these basic skills differs much between urban and rural schools, contrary to popular belief.

School System. Like State of residence, and for the same reasons, school system attended - Government, Catholic, Independent - is represented by dummy variables. Government schools constitute the reference group for the coefficients shown in Table 4.1 in the same way as NSW was used as the reference group for State effects. In all, these data show an advantage for achievement of attendance at either of the two non-Government school systems. Individuals otherwise equal in all respects measured but attending a Catholic school score an average of 2.98 points higher in Word Knowledge, 1.14 points higher in Literacy and 0.62 points higher in Numeracy. The analogous figures for students from the Independent schools are 3.67 points higher on Word Knowledge, 1.28 points higher on Literacy, and 1.57 points higher on Numeracy. Seen in another way, this means that some 67 per cent of Independent school students, and 64 per cent of Catholic school students score above the Government school mean on Word Knowledge, for example.

The same pattern of effects is seen in another form in the second panel of Table 4.2 where we present the school system effects as adjusted deviations from the grand mean as we did in the case of State effects. These adjustments are greatest for the Independent schools and least for Government schools, pointing out as their analogues did that apparently one can do better, on the average, simply as a function of attending an Independent school.

It is tempting and probably reasonable to attribute some part of these differences to differences in the nature of education provided within the different systems. However, unless one can be certain that all the other relevant influences on achievement have been controlled - and that is next to impossible - the possibility remains that these effects are overestimated: that is, just as with the State effects, what we may be seeing are average differences between the systems in some unmeasured population characteristic. We have no way of knowing the extent to which this may be true, but we have reduced the likelihood by controlling on the range of other State, school, family and sex variables noted. Without doubt we are overestimating these school system effects but it would be difficult to argue that they are statistical artifacts. As with State effects, we have increased the degree of certainty that these system differences in achievement are not solely a function of differences in student populations. And, as before, we are unable to say whether they represent between-system differences in educational practice or provision. However, our analyses make this a question worth asking now. If we take a variety of student population differences into account and still find between-system differences in achievement then it seems particularly important that we find out whether these system differences are due to differences in what the three systems do and provide. Since most aspects of educational practice and provision are amenable to policy action, identification of these differences could lead most easily to direct action.

Family Effects

Ethnicity. Before considering the effects of ethnicity we need to recall three things: first, these too are dummy variables and the Australian-born group is the reference group for the coefficients shown in Table 4.1; second, the variables are fairly coarse measures of ethnicity; and third, we are capturing migrancy in the 'English-born' variable, and migrancy and language in the 'non-English-born' variable The ethnicity coefficients in Table 4.1 suggest that, other things equal, being born outside Australia in an English-speaking nation makes no discernible difference to one's achievements in school; thus, neither accent nor migrancy appears to matter for migrants whose mother-tongue is English. Where this mother-tongue is not English one or both, or a variety of concomitants, do matter. Compared with other students alike in the respects measured here, 'non-English-born' students are disadvantaged in these achievements scoring, on the average, 1.83 points lower on Word Knowledge, 1.09 points lower on Literacy and, where language is less important, 0.71 points lower in Numeracy.

The third panel in Table 4.2 illustrates these effects more graphically. The effect of being born outside Australia in a non-English speaking nation is to adjust downwards the means of Word Knowledge, Literacy and Numeracy by 1.56, 0.89 and 0.57 points respectively. For the purposes of comparison we express these adjustments in standard deviation units and note that, for the non-English group the degree of disadvantage decreases from around 0.15 of a standard deviation for Word Knowledge (-1.56) and Literacy (-0.89) to 0.01 of a standard deviation for Numeracy (-0.57). Given that the decline in disadvantage parallels the verbal requirements of the tests and because the other 'migrant' group is not disadvantaged significantly, we find it reasonable to attribute this ethnicity effect to that of language disadvantage arising from the need to work in a second language or at least a language different from that of one's parent's mother-tongue, with all that this implies.

Family Rurality. Whatever the differences that may exist between rural and urban families, and we discussed several in the value domain, they appear to make no difference to a student's achievement as measured. Probably, school learning of these skills at least is universally valued.

Family Size. Family size has a consistent negative effect on achievement. Ceteris paribus, each sibling costs 0.39 of a point in Word Knowledge, 0.25 of a point on Literacy, and 0.28 of a point in Numeracy, on the average. While small and confounded by birth-order effects, the effects shown are notable for their consistency. Explanations of family size effects on achievement usually invoke a 'sharing-of-parents' or 'sharing of resources' argument (cf. Marjoribanks, 1979).

Parental Attainments. The social and educational attainments of parents have fairly consistent effects on the respondent's achievements over and above the other influences noted. Given that this is one of the most documented relationships in educational research, albeit usually at the zero-order level, it was not unexpected. Differences in levels of achievement-related values, stimuli, encouragements and models within family environments seem to parallel socioeconomic differences between families and generally are thought to affect the life-styles and life-chances of the offspring (cf. Kohn and Schooler,1969 for example).

Sex Differences

Other things equal, sex differences in Word Knowledge, Literacy and Numeracy are minor with the only statistically significant effects those on Literacy, at which females traditionally outperform males (cf. Walker, 1976). In this case, being female is worth an extra four-tenths of a point, on the average.

Relative Effects

It is important to remember that we have been discussing metric coefficients which are not comparable within the same equation. For example, the fact that the coefficient for father's occupation is 1.12 and that for father's education is 0.51 in the equation for Word Knowledge provides only the meaning of the coefficients themselves, not a comparison. The standardized coefficients within the second panel of Table 4.1 provide the comparisons because they are standardized to the same metric - standard deviation units. Thus, we see the analogous standardized coefficients are 0.15 and 0.06 suggesting that, other things equal, the effects of father's occupational attainments are some two and one-half times those of their educational attainments. There is no real point in providing a detailed interpretation of these coefficients as they represent only a part of the total equation. Nevertheless, it is of some interest to note that the largest effects within the family variables noted are those due to father's occupation and family size, rather than parental education as one might expect. Differences already noted in the measurement precision between the occupational and educational attainments of parents may account for some part of this difference.

Staying and Leaving

The fourth column of Table 4.1 contains the structural coefficients representing the effects of State, school, family, sex and achievement on staying or leaving school. The dependent variable is dichotomous and we chose to code 'staying' as '1' and 'early leaving' as '0'; thus, the coefficients represent effects on staying in school. Changing the signs of all coefficients would produce estimates of the effects of these ascribed and achieved characteristics on 'early school leaving'.

Because the dependent variable is dichotomous each structural coefficient can be interpreted as the net difference in the probability of being '1' on this variable due to a one-unit difference in the independent variable, other things equal. Thus, the coefficient for family size effects on staying in school (-0.01) can be interpreted as, other things equal, each sibling decreases by 0.01 the probability of staying in school. Alternatively, each extra sibling increases by 0.01 the probability that the respondent is an early school leaver.

State Effects

Statistically significant effects are indicated for four States, ACT, Qld, SA and Tas., and are interpreted as follows. In comparison with students in NSW like them in all other respects measured, students in the ACT are more likely to stay on in school, and those in Qld, SA and Tas. are more likely to leave early.

We can interpret these data in another way. Relative to NSW students like them in all other measured respects:

i 22 per cent more ACT students stay on in school;
ii 4 per cent more Vic. students stay on;
iii 9 per cent less Qld students stay on in school;
iv 10 per cent fewer SA students are likely to stay to the final years of high school;
v 7 per cent fewer WA students stay on; and
vi 13 per cent fewer Tas. students stay on to the senior years of high school.

The same information is presented as net deviations from the mean in the first panel of Table 4.2 with the difference that NSW is included and a comparison across all States is possible. Since the coefficients for State effects on 'staying in school' are interpretable in probability terms, as noted above, the 0.24 coefficient for the ACT means that, other things equal, living in the ACT increases by 0.24 the probability of staying to Year 12. At the other extreme, living in Tas. reduces this probability by an average of -0.11.

School, family, sex and school achievement aside, where one lives in Australia makes a difference in the decision to stay on at school or leave early. We cannot be specific about the reasons for these State effects. Perhaps the educational systems themselves are differentially attractive to students because of differences in the quality of life that students experience in their schools and/or, possibly, State differences in the nature of labour markets make graduation from high school appear more or less useful. Work in progress on a measure of 'Quality of School Life' (Williams et al., 1980) will allow us to test the former interpretation in the near future.

School Effects

School Rurality. The effects are statistically insignificant and suggest that, other things equal, whether one attends an urban or a rural school makes little difference in this respect.

School System. Not so the effects of attending non-Government versus a Government school. The effects shown in Table 4.1 follow the same pattern as that for achievement; among students otherwise equal in terms of where they live, family background, sex and achievement, those attending schools in either of the two non-Government school systems are more likely to stay on to the final years of high school than are students at schools conducted by the State Government authorities. In Catholic schools this is an 11 per cent difference, relative to Government schools, and in non-Government schools it is an 18 per cent difference. The analogous coefficients in Table 4.2 show the same pattern, with the Independent schools having the greatest net effect (0.15), the Catholic schools next in size (0.08) and the Government schools with the least effect (-0.03).

One possible interpretation attributes these effects to the schools themselves. In addition to enhancing the achievement of their students as we have seen, and apart from the indirect effect that this has on staying to in school, the non-Government schools increase the likelihood that their students will not leave before graduating. Whether they instil a love of education or fear of unemployment or the Protestant ethic, or something else, we are unable to say, but whatever it is, ceteris paribus, more of their students stay on in school. Perhaps the quality of school life differs between the systems and, as with the State differences noted earlier, we will investigate this proposition soon. An alternative interpretation says that these differences simply reflect unmeasured differences between the three populations of students. It is plausible, for instance, that parents willing to pay for an Independent school education believe that education ensures a good start in life and exert pressure on their offspring to stay in school. If true, this would mean that some or all of the school system effects are due to average between-system differences in parental encouragement. It is also possible that the differences we observe are due to the transfer of more able students from Government high schools to the Catholic and Independent schools for their senior years, and a reverse movement of the least able out of the two non-Government systems. We have no way of knowing with our present data whether one, some, all or none of these explanations is correct.

Family and Sex Effects

Of the eight possible direct effects on staying at school shown in Table 4.1 only two achieve statistical significance. Being born outside Australia in a nation whose mother tongue is not English appears, other things equal, to be an advantage as far as completing high school is concerned. In comparison with Australian-born students like them in all other respects measured, 18 per cent more stay on in school to the senior years. The data shown in the third panel of Table 4.2 show this same effect in terms of adjustments to the grand mean. Marginally less Australian-borns and English-borns stay to the senior years of high school, other things equal, but substantially more non-English-borns do so. This is consistent with the often documented fact that migrant groups tend to see education as the path to social mobility upward from the lower social strata to which they are assigned on arrival (cf. the studies reviewed in Sturman, 1979: 35).

The only other effect of statistical significance is that due to father's occupation (0.07) which means, other things equal, that students from families in the upper levels of the social structure are more likely to stay on at school. In fact, each 100 point difference in occupational prestige is linked to an increase of 0.07 in the probability of staying on to the senior years of high school, net of other influences. This too is consistent with the substantial literature that links family background to achievement, aspirations, retention and attainment through differences in parental encouragement. Thus, what we may be seeing is the effect of parental encouragement to stay in school irrespective of how well the student is doing (cf. Spenner and Featherman, 1978).

The Effects of Achievement

As expected, each of the three achievement measures has a positive effect on staying at school, other things equal. Although these effects appear to be equal they are not because of the differing metrics of the three tests. The standardized coefficients shown in the lower panel of Table 4.1 indicate that the verbal and numerical skills tapped by the Word Knowledge and Numeracy measures have the greatest influence, with that of Literacy approximately half their magnitude. Since much of the business of schools is the teaching of these skills we suspect that those who learn them well are rewarded accordingly. As a result they find schooling a reasonably fulfilling way of life that promises an even better future, so they stay. Those less capable earn fewer rewards and see little point to a continued schooling that will offer them even fewer rewards in the future, so they leave.

Mastery of Literacy and Numeracy

In the reports of the 1975 Literacy and Numeracy study student scores were expressed as mastery scores - a student either had or had not mastered the defined skills (see Bourke and Keeves, 1977). To this point in the analyses we have used the total test scores rather than the mastery scores because their distributions approximate more closely those required by the statistical techniques we have adopted.

To look at the influences on mastery of these skills and at the effect that mastery has on staying in school, we repeated the analyses noted above using the mastery scores in place of the total scores and the results are shown in Table 4.3. Predictably, we explain somewhat less of the variance in each of the three dependent variables and show a somewhat different pattern of statistically significant effects brought about by fewer coefficients reaching signficance in the equations using the mastery scores. The reason, of course, is that the dichotomous mastery variables have restricted variation compared with the total scores.

Achieving Mastery

State differences in the proportions achieving mastery of Literacy are minimal. Relative to NSW students like them in all other respects, between one and four per cent more students in the other States achieve mastery in these basic reading skills. None of the effects, other than that of NT, reach statistical significance. Net State differences in mastery of Numeracy are another matter. With the same qualifications, 10 per cent more Qld students achieve mastery, while seven per cent more ACT students, four per cent more SA students, four per cent fewer Vic. students, three per cent fewer WA students, and two per cent fewer Tas. students achieve this level of basic numerical skills.

Attendance at a non-Government school also increases the chance of achieving mastery of these skills. In comparison to Government school students like them in all measured respects:

i 10 per cent more Catholic school students achieve mastery in Literacy;

ii 9 per cent more non-Governmen school students achieve mastery of these basic reading skills;

iii 3 per cent more Catholic school students achieve mastery in Numeracy; and

iv 10 per cent more Non-Government school students master these numerical skills.

Analogous comparisons for the three ethnic groups show five per cent fewer English-born and 11 per cent fewer non-English-born achieving mastery of Literacy, other things equal. The comparable figures for mastery of Numeracy are two and six per cent fewer respectively.

Table 4.3 The Stayer/Leaver Model with Mastery Scores

Independent Variables	Literacy (mastery)	Numeracy (mastery)	Staying in School
	Dependent Variables		
	Metric Coefficients		
ACT	*0.02*	*0.07*	0.22
Vic.	*0.00*	*-0.04*	0.04
Qld	*0.03*	0.10	-0.08
SA	*0.04*	*0.04*	-0.10
WA	*0.01*	*-0.03*	-0.08
Tas.	*0.01*	*-0.02*	-0.14
NT	*-0.26*	-0.35	*0.05*
Catholic School	0.10	*0.03*	0.11
Independent School	0.09	0.10	0.18
School Rurality	*-0.02*	*-0.02*	*-0.03*
English-Born	*-0.05*	*-0.02*	*-0.04*
Non-English Born	-0.11	-0.06	0.19
Family Rurality	*0.00*	*-0.00*	*0.01*
Family Size	-0.03	*-0.02*	-0.01
Father's Occupation	0.04	0.04	0.07
Father's Education	*0.03*	*0.01*	*0.00*
Mother's Education	*0.01*	*0.02*	*-0.01*
Sex	*0.03*	*-0.02*	*0.02*
Word Knowledge			0.11
Literacy (mastery)			0.09
Numeracy (mastery)			0.09
Proporation of Variance Explained	0.07	0.06	0.19

Notes: Coefficients in italics are less than twice their respective standard errors.

Coefficients not in italics are greater than or equal to twice their respective standard errors.

All metric coefficients for father's occupation have been multiplied by 100.

The family background variables show similar patterns to those noted above and are subject to similar interpretations; for example, other things equal, students whose fathers' occupations differ by 100 points in occupational prestige - the difference between a primary school teacher (630 on the ANU-2 scale) and a bookkeeper (527), for instance - differ by four per cent in the proportions reaching mastery on either test.

Mastery and Staying in School

The structural coefficients shown for the several State, school, family and sex effects offer the same interpretations as those shown in Table 4.1 and, thus, we restrict our interpretations to those describing the effects of mastery of Literacy and Numeracy on staying on at school. Since the dependent variable is a dichotomy, the same interpretation used above applies here as well. Other things equal, nine per cent more of the students who have mastered the Literacy skills tested stay on to the senior years of high school, compared with those who had not achieved this level. Mastery of Numeracy offers the same interpretation.

Thus, the use of mastery scores for Literacy and Numeracy provides a slightly different perspective on the findings estimated with the total scores on these measures, as one would expect. Moreover, these analyses provide additional information about the causes of 'mastery' - what influences movement from a state of non-mastery to a state of mastery - and about the effect that this has on staying on at school. But as these scores conceal a good deal of variation within the two categories we do not restrict the analyses by using the mastery scores alone, preferring instead to provide complementary data on the causes and effects of Literacy and Numeracy seen in terms of both total scores and mastery scores where appropriate.

Ascription and Achievement

At this point we reflect the interpretations made above to talk about early school leaving, one of the motivating concerns of the project, and the roles played by ascription and achievement in this decision. Our data indicate that the levels of verbal and numerical skills achieved figure prominently in this decision, as one would expect. Other things equal, it is the less capable academically who leave school early. Among the three measures of achievement, Word Knowledge and Numeracy have roughly equal influence, about twice that of Literacy. Given that the Word Knowledge test is a measure of verbal ability (cf. Keeves and Bourke, 1976: 34) and that numerical abilities relate strongly to general intelligence, this pattern of effects indicates that we may be tapping general intelligence with these tests as well as achieved skill levels. In short, those who leave early are, other things equal, those least capable of handling the manipulation of abstract symbols that is the core requirement of the academic curriculum, and those that have developed the lowest levels of verbal and numerical skills as a result.

Ascription plays a part in this process as well. Where one lives in Australia seems to makes a difference directly to the decision to leave school early, and indirectly because State of residence influences achievement and achievement affects early school leaving. While our data do not allow us to explain why these State effects occur, we might suppose that they reflect in some part the differing philosophies, curricula and operations of the State educational systems. In this context, we suggest that there may be State differences in the quality of life that students experience at schools. These State differences may reflect as well differences in the distributions of available occupations between the more industrialized and the predominantly rural States, such that the proportion of available jobs open to early school leavers varies, or is seen to vary, from State to State.

Ascriptive influences come as well from the school system attended. Other things equal, including level of achievement, students attending Government schools are more likely to become early school leavers than are their counterparts in the non-Government schools. Moreover, these effects are enhanced by the indirect effects that come about because attendance at non-Government schools affects achievement, and achievement affects early leaving. Whether these effects come about as a function of what the non-Government schools themselves do, or whether they represent unmeasured average between-system differences in student characteristics, both of these, or something else, we cannot answer.

The meritocratic model noted earlier gains its best support in the comparison of the direct and indirect effects of family background. While the variety of family background variables influence verbal and numerical achievement, direct effects on early school leaving are limited to two components, ethnicity and father's occupation. Migrants whose mother-tongue is not English and respondents whose fathers have high status occupations are less likely to leave school early. Both effects, we suspect, have the same explanation; greater levels of parental encouragement/pressure to stay in school. However, the characteristics of family background ascribed by birth are influential mainly because they affect achievement which, in turn affects early school leaving. Schools then, seem to be providing a measure of equality of educational opportunity, at least within State and system type. They are not, of course, providing equality of results, as the effects of family background on achievement make clear.

Descriptive Data on Stayers and Leavers

The School Stayers

The student (stayers) questionnaire can be found in Appendix A and the data collected are summarized in Tables 4.4 to 4.9. Table 4.4 shows the distribution of the stayers by type of educational institution attended during 1978. The majority of this group were

Table 4.4 School Stayers: Type of Educational Institution Attended In 1978

Type of Institution		Percentage
Secondary School		83.7
Teachers College		0.3
University		0.7
College of Advanced Education		0.5
Technical College		3.9
Business College		0.6
Other		0.0
Non-response		9.7
	Total	100 (N=2311)

Table 4.5 School Stayers: Year in Secondary School

Year		Percentage
Year 10 or less		2.8
Year 11		23.6
Year 12		56.8
Not Attending Secondary School		8.6
Missing		8.2
	Total	100 (N=2311)

still in secondary school at this time with only a very few in tertiary education. Of those still in school, over half were in their final year and it seemed clear that most stayers would complete their secondary education by the end of 1979 (Table 4.5).

Table 4.6 shows the stayers' reasons for continuing with full-time education. Higher qualifications and better job prospects seem most important, but a number appear to have remained at school for want of a job or something better to do. More than half of the stayers plan to continue with further education in 1979 (Table 4.7).

During the summer of 1978-79, 11 per cent of this group had a full-time job, more had part-time work (24.7%) but most were unemployed (55.7%); see Table 4.8. Their long term job expectations are shown in Table 4.9. As one would expect, many stayers aspire to professional/clerical jobs - jobs that require educational credentials (cf. the aspirations of school leavers in Table 4.17).

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Table 4.6 School Stayers: Reasons for Continuing with Full-Time Education

Reason	Percentage[a]
To gain higher qualifications	76.6
To get a better job	47.4
Because I like it	21.7
Because I couldn't get a job	6.2
Because there was nothing else to do	3.6
	(N=2311)

[a] Respondents could nominate more than one reason.

Table 4.7 School Stayers: Plans for 1979

Plans	Percentage[a]
Further study	57.9
Get a job	35.6
Haven't made up my mind yet	9.4
	(N=2311)

[a] Multiple response possible.

Table 4.8 School Stayers: Employment Status at the end of 1978

	Percentage	
Employed full-time (summer job, probably)	10.8	
Employed part-time	24.7	
Unemployed	55.7	
Non-response	8.6	
Total	100	(N=2311)

Table 4.9 School Stayers: Status of Job Expected in Five Years Time

	Occupational Category	Percentage
1	Upper Professional	16.2
2	Graziers	a
3	Lower Professional	29.3
4	Managerial	2.1
5	Shop Propietors	0.2
6	Farmers	0.7
7	Clerical Workers	11.1
8	Military, Police	3.3
9	Craftsmen	6.5
10	Shop Assistants	0.3
11	Operatives	0.3
12	Drivers	0.3
13	Service Workers	3.7
14	Miners	a
15	Farm Workers	0.2
16	Labourers	a
Non-response, or could not be classified		25.5
	Total	100 (N=2311)

[a] Percentage of respondents in this category totalled less than 0.1 per cent.

The School Leavers

School leavers - that is, respondents who were not full-time students during 1978 - made up 53 per cent of our retained sample. The questionnaire given to this group is included in Appendix A and the data collected are summarized in Tables 4.10 through 4.19.

Table 4.10 shows the month and year of leaving secondary school. We note that most of the group left school at the end of a year, rather than during it and that most of the leavers finished school in either 1976 or 1977. By that time most had completed Year 10, a few had finished Year 11 and even fewer reported that they had completed Year 12 (Table 4.11). About 8 per cent left school without completing Year 10.

From Table 4.12 we see that the majority of leavers found work within 3 months of leaving school but 5.4 per cent took more than a year to find their first job. This first job was a disappointment to over 38 per cent of the group but 36.5 per cent found it to be what they had really wanted (Table 4.13). Given that the leavers have been in the labour force for varying lengths of time, Table 4.14 is difficult to interpret; we note however that most leavers have had only one full-time job since leaving school and very few appear to change jobs frequently. Almost half have been unemployed at some time since leaving school (Table 4.15) but over 80 per cent were employed at the time of the survey (Table 4.16).

Table 4.10 School Leavers: Date of Leaving Secondary School

Year	Percentage	Month	Percentage
1975	7.7	January	0.4
1976	40.6	February	1.8
1977	44.4	March	2.9
1978	4.6	April	3.0
		May	3.3
Non-response	2.7	June	3.2
		July	2.3
		August	2.8
		September	2.6
		October	2.7
		November	28.6
		December	43.3
		Non-response	3.1
Total	100 (N=2608)	Total	100 (N=2608)

Table 4.17 shows the status of the leavers' current or last main jobs, together with that of the job they expect in five years time. There are important differences between males and females here and we note them in this table as well. It is clear that some job categories contain more females than males (for example clerical workers) while in others there are more males than females (e.g. craftsman, operatives). These are most evident in the status of current or last main job and persist in job aspirations. In contrast to stayers relatively few leavers are in or aspire to professional jobs and the majority expect to continue to work in clerical/craftsman/service jobs.

Table 4.18 shows the extent to which the school leavers are or have been involved with further study and the type of study undertaken is shown in Table 4.19. We note that 37.4 per cent of the group have no plans for further study in the near future and that over half have started or plan to start a course. Apprenticeships are the most common type of course undertaken and only very few members of the group appear to be interested in or able to undertake tertiary level study.

Table 4.11 School Leavers: Highest Year of Secondary Schooling Completed

Year	Percentage
8 or less	0.9
9	7.1
10	43.4
11	31.7
12	14.3
Non-response	2.5
Total	100 (N=2608)

Table 4.12 School Leavers: Time Taken to Find First Job After Leaving Secondary School

Number of Months	Percentage
less than 1 month	24.4
1	20.0
2	16.1
3	8.3
4	4.3
5	2.9
6-8	5.9
9-11	3.4
12 months or more	5.4
Non-response	8.9
Total	100 (N=2608)

Table 4.13 School Leavers: Satisfaction with First Job

Was it the kind of job your really wanted?	Percentage
Yes	36.5
Almost	18.1
Not really	20.2
No	18.2
Non-response	7.0
Total	100 (N=2608)

Table 4.14 School Leavers: Number of Jobs Since Leaving School

Number of Full-time Jobs	Percentage	Number of Part-time Jobs	Percentage
1	55.6	1	16.8
2	18.4	2	7.5
3	6.5	3	2.1
4	3.1	4	0.9
5 or more	1.8	5 or more	1.4
none	11.5	none	68.5
non-response	3.0	non-response	2.9
Total	100 (N=2608)		100 (N=2608)

Table 4.15 School Leavers: Total Unemployment Since Leaving School

Number of Months	Percentage
less than 1 month	46.0
1	5.2
2	6.9
3	5.6
4	4.6
5	3.6
6	4.4
7-9	6.0
10-12	4.5
more than 12 months	5.3
non-response	6.9
Total	100 (N=2608)

Table 4.16 School Leavers: Current Employment Status (Summer 1978-79)

Employment Status	Percentage
Full-time job	77.9
Part-time job(s)	3.6
Unemployed	17.6
Non-response	0.9
Total	100 (N=2608)

Table 4.17 School Leavers: Status of Present or Last Main Job and Expected Job in Five Years by Sex

Occupational Category	Present or Last Main Job		Expected Job	
	Males %	Females %	Males %	Females %
1 Upper Professional	0.2	-	1.8	0.6
2 Graziers	-	-	-	-
3 Lower Professional	0.8	2.8	2.8	8.3
4 Managerial	0.1	a	1.7	0.8
5 Shop Proprietors	-	0.1	1.7	0.7
6 Farmers	0.4	0.1	1.2	-
7 Clerical Workers	6.2	42.4	4.0	30.3
8 Armed Service, Police	3.5	0.1	4.4	1.5
9 Craftsmen	40.4	1.0	37.9	0.8
10 Shop Assistants	4.4	21.1	0.5	4.6
11 Operatives	9.3	4.6	5.7	1.5
12 Drivers	2.5	a	3.5	0.1
13 Service Workers	7.3	14.3	4.1	14.7
14 Miners	0.1	-	0.4	-
15 Farm Workers	5.3	0.5	2.1	0.1
16 Labourers	12.6	1.6	1.4	0.2
Home Duties	-	0.4	-	4.1
Non-response or could not be classified	6.9	10.2	26.7	31.6
Total	100 (N=1332)	100 (N=1276)	100 (N=1332)	100 (N=1276)

[a] Percentage of respondents in this category totalled less than 0.01 per cent.

Table 4.18 School Leavers: Participation in Further Study

	Percentage	
Started a course but gave it up	8.3	
Completed a course	12.2	
Still doing a course	19.6	
Plan to start a course in 1979	12.3	
No plans for further study	37.4	
Non-response	10.2	
Total	100	(N=2608)

Table 4.19 School Leavers: Type of Further Study Undertaken

Type of Course	Percentage	
Apprenticeship	22.3	
Other Certificate Course	10.9	
Diploma Course	3.6	
Degree Course	1.1	
Other	5.7	
No Further Study	37.4	
Non-response	19.2	
Total	100	(N=2608)

CHAPTER 5

EARLY SCHOOL LEAVERS: CAREER BEGINNINGS

In this chapter we examine the transition from school to work of early school leavers, individuals who leave high school before graduating. Some 2608 of our respondents (53 per cent) fall into this category. The model guiding the analyses is that shown in Figure 2.1, the simplified status attainment model. This is a three-stage model that looks: first, at the effects of the several variables in the categories State, school, family and sex on those school achievements measured by the Word Knowledge, Literacy and Numeracy tests; second, at the effects of all of these on the educational attainments of early leavers, measured as year level of schooling completed; and third, at the effects of these variables on a variety of occupational attainments in the early career of these individuals. For reasons discussed in Chapter 3, 'post-school experience' is also included in the model to control for the confounding influence of period effects, labour force experience and simply the opportunity to have attained the occupational characteristics measured. This basic model is identical to Figure 2.1 with the single exception that 'post-school-experience' is included in all equations involving occupational attainments (block 7) as dependent variables.

This model is seen as the simplest overall model we could estimate and, after presenting the analyses based on it, we elaborate the model in the following ways. First, as in Chapter 4 we provide the alternative form of the dummy variable coefficients, the adjusted deviations from the grand mean, in order to illustrate more clearly the comparative effects of State, school system and ethnicity. Second, as before we consider the effects of Literacy and Numeracy in terms of mastery scores to complement the data on the effects of school achievement measured as total Literacy and Numeracy scores.

Thirteen Structural Equations

While the summary model shown in Figure 2.1 implies three summary equations based on the blocks of variables identified, in fact we estimated thirteen equations, one for each variable shown within blocks five through seven, plus an equation for 'post-school-experience'. Three equations were estimated in connection with block five, one for each of Word Knowledge, Literacy and Numeracy; one equation was estimated for years of schooling completed and another for post-school experience; and eight were estimated for block seven, one for each of the measures of occupational and further educational attainment shown. In estimating these equations we regressed each of the variables in block five on the eighteen variables contained in blocks one through four - seven State dummy variables, two school system and two ethnicity dummy variables and one measure each of school rurality, family rurality, father's occupation, father's education, mother's education, family size, and respondent's sex. The single equation for block six regressed 'schooling completed' on twenty-one variables, the eighteen noted above plus Word Knowledge, Literacy, and Numeracy. For the sake of completeness, we also estimated an equation for the 'post-school experience' variable in block 3, but the coefficients have no ready interpretation because the variable is a compound measure of several variables. Eight equations were estimated for block seven and in each a measure of occupational attainment was regressed on twenty-three variables, all the preceeding plus 'schooling completed' and 'post-school experience'.

Displaying the Data

The amount of information to be displayed is substantial; the thirteen equations estimated generate some 280 structural coefficients and these are to be presented twice, once in their metric form and once as standardized coefficients. The metric coefficients are presented in the three tables - 5.la, 5.lb and 5.lc - which consider, respectively, State effects, family and school effects, and individual effects. The independent variables in each table are displayed along the horizontal axis and the thirteen dependent variables, grouped into six educational and six occupational attainments plus 'post-school experience', are listed on the vertical axis. Thus, each of the thirteen rows within each table contains metric structural coefficients from a single equation. It is important to remember that the coefficients shown in each part-table are net coefficients. That is, the State effects shown in Table 5.la are net of the effects of family, school, and the individual characteristics of respondents; the family and school effects shown in Tables 5.lb are net of State and individual differences; and the individual effects shown in Tables 5.lc are net of State, school and family effects.

Since no useful interpretation of the standardized effects of dummy variables as calculated is possible we are limited to an examination of the relative influences of school and family rurality, family size, father's occupation and education and mother's education, along with ascribed (sex) and achieved (Word Knowledge, Literacy, Numeracy, schooling completed) characteristics of the respondent. These effects are, of course, net of State, school system and ethnicity influences, and are shown in Table 5.4. Comparisons of the relative effects of the State, school system and ethnicity dummy variables are provided in the form of adjusted deviations to the grand mean in Table 5.2.

As in Chapter 4, coefficients which equal or exceed twice their standard error are shown in non-italic type and our interpretations focus on these for the most part. We doubt the significance, statistical and otherwise, of the others on the basis that, with a sample size of 2608, coefficients not reaching statistical significance at the level chosen are very small and are unlikely to have much practical significance either. However, these coefficients are shown in the tables in italics.

Interpretation

Two general approaches are adopted. In one the focus is on an examination of the causes of each educational and occupational attainment examined one by one; in other words, to interpret the rows of the table. In the other the approach is to interpret the columns and focus on State, school, family, and individual effects across the range of attainments. We chose the latter approach for this chapter in the interests of establishing consistencies in effects across the social processes represented, to be followed in Chapter 6 by an issue-oriented summary of the findings treating the several attainments one by one. Thus, in this chapter we talk about State effects, school effects, family effects and so on. In Chapter 6 we will talk in summary fashion about the causes of: achievement; the decision to leave school early; the transition from school to work among early school leavers; and the future.

State Effects

Our main purpose in introducing State of residence into the model is to control unspecified between-State sources of variation in the educational and occupational attainments of early school leavers. That is, differences in State economies, labour markets and educational systems, at least, are seen as potential confounding influences in analyses based on a national sample of youth; see Alwin (1976) for a similar approach to college effects, and Munck (1979) in relation to adjusting for between-school differences. Since we are capturing aggregate State effects in this way, it is difficult to assign a precise meaning to whatever effects may emerge, and we do not.

Table 5.1a is the one of interest. For the effects shown in this table it is important to remember first, that these are metric coefficients and, second, because they are dummy variables, each effect is interpreted relative to NSW, the omitted group. Thus, the -0.86 coefficient for Vic. in Table 5.1a means, other things equal, that early leavers in Vic. score some nine-tenths of a point lower on Word Knowledge, on the average, than do early leavers in NSW. Similar interpretations are possible for the other coefficients shown for each for the three school achievement variables. The consistent advantage of Qld and SA early leavers in Word Knowledge, Literacy and Numeracy is most notable. While these differences probably reflect differing curricular emphases across the States, State differences in the characteristics of student populations might be implicated given that we are now talking about early school leavers, a select group. However, by definition, such differences would need to be unrelated to the other student characteristics already controlled - school system attended, social origins, family and school rurality, sex, and so on. This fact seems to reduce the likelihood that between-State differences in student populations are responsible for these effects.

Table 5.1a State Effects on the Educational and Occupational Attainments of Early School Leavers

	Independent Variables						
	STATE						
Dependent Variables	ACT	Vic.	Qld	SA	WA	Tas.	NT
Word Knowledge	*-0.39*	*-0.86*	*0.99*	1.88	*0.96*	*0.74*	-5.18
Literacy	*0.64*	*-0.13*	0.92	1.01	*0.13*	*0.23*	-4.16
Numeracy	*0.38*	*-0.58*	2.60	1.13	*-0.72*	*0.03*	-6.83
Schooling Completed (years)	*0.14*	0.39	0.35	0.67	0.43	*0.16*	0.45
Post-School Experience (months)	*-3.14*	*-0.02*	4.78	*0.02*	4.00	*1.62*	*-1.53*
Attempted Further Study?	*-0.13*	-0.11	-0.19	-0.19	*-0.06*	*-0.10*	*-0.06*
Further Study Plans?	*0.06*	-0.08	-0.21	-0.16	*-0.06*	-0.15	*0.04*
Time to First Job (months)	*-0.48*	-0.65	0.63	-0.65	0.82	*0.64*	*-0.54*
Satisfaction with First Job	*0.14*	*0.12*	*-0.05*	*0.11*	*0.10*	*-0.06*	*0.06*
Ever Unemployed?	*-0.03*	*-0.02*	0.08	*0.05*	*0.00*	*0.03*	*0.06*
Months Unemployed	*0.56*	*0.37*	0.96	0.88	*0.59*	*0.32*	*-0.40*
Status of 'Present' Job	*-6.37*	*-4.92*	*-4.30*	-8.79	*-3.93*	*-7.53*	*20.34*
Status of Expected Job	*-10.04*	-8.89	*3.89*	*6.77*	*-8.62*	*-9.09*	*18.51*

Note. The coefficients shown indicate State effects, other things equal

State differences for 'schooling completed' are shown in the fourth equation. Again, the effects are relative to NSW and show that, other things equal, students in Vic. stay in school an average of 0.39 years longer; those in Qld stay 0.35 years longer; in WA early leavers get an extra 0.43 years of schooling; those in Tas. stay 0.16 years longer; and those in SA stay on for an extra two-thirds of a year, on the average. While these may appear to be minor differences we ought to keep in mind that they are net differences among means and thus represent fairly substantial differences in the total schooling of this particular cohort. To some extent these figures may reflect State differences in the definition and implementation of the minimum legal school leaving age, but it is equally plausible that they reflect State differences in holding power. We raise again the possibility that between-State differences in the quality of school life may be involved. We take up the question of whether these differences affect early career status later when the effect of schooling completed is considered.

Seeing that 'post-school-experience' contains components of period of entry into the workforce, labour force experience, and simply opportunity to have attained the occupational statuses noted, we present the coefficients but do not interpret them. As noted, the variable was introduced for the purpose of controlling the confounding influence of these effects on occupational attainments.

State effects on the actions and intentions of school leavers to engage in further education, other things equal, show that relative to NSW, and with only one exception fewer school leavers in ACT, Vic., Qld, Tas., WA and SA have attempted further study or plan to in the future. Whether this is a function of State differences in the opportunity to undertake further education or in the motivation to do so engendered by previous educational experience, or something else, cannot be answered with these data.

State differences in early career attainments are displayed in the remaining coefficients of Table 5.1a. Living in ACT or Tas. offers no statistically significant advantage or disadvantage vis a vis NSW in the time it takes to obtain a job after leaving school. However, among individuals otherwise equal: those living in Vic. take two-thirds of a month less, on the average, to obtain their first job; those in Qld two-thirds of a month longer; those in WA eight-tenths of a month longer; and those in SA two-thirds of a month less, than do early school leavers living in NSW. State effects on unemployment are most pronounced in Qld and SA. Other things equal, living in Qld increases the chances of having experienced unemployment and, on the average, early leavers have experienced almost a month more unemployment than their NSW counterparts. Similarly, SA leavers have experienced an average of 0.88 months extra unemployment vis a vis NSW early school leavers. Note that these effects are over and above the effects of education, the opportunity to have experienced unemployment, and the other independent variables within the model. We can only assume that this is indicative of differences in the labour markets of the various States such that, other things equal, an individual is more likely to obtain a job in one State than in others simply as a function of State differences in the availability of jobs.

State differences in occupational status attained and expected are minor and, overall, not statistically significant. The metric of the status scale ranges from a low of 331 for labourers in food, beverage and tobacco industries, to a high of 915 for independent medical practitioners (Broom et al. 1977:103). Thus, the largest effect shown (20 points) does not represent a marked difference in status between occupations. They may reflect minor State differences in the relative proportions of unskilled and semi-skilled jobs in white-collar and blue-collar occupations.

These State effects are more clearly shown in the upper panel of Table 5.2 where we show them as adjusted deviations from the grand mean for the major educational and occupational attainments. Effects on school achievement, job satisfaction, employment at the time of the survey, and job status are not shown. We presented State effects on achievements for the total sample in Chapter 4 and the remaining omissions show negligible State effects in Table 5.1a.

State effects on years of schooling completed are negative for ACT, NSW and Tas.; other things equal, early school leavers leave earlier in ACT, NSW, and Tas. than they do in other States. They take longer to get their first job in Qld, WA and Tas., and are more likely to have been unemployed if they live in Qld, SA and Tas., experience the greatest amount of unemployment in Qld and SA, and are less likely to have engaged in further education, or to plan to do so, if they live in these two States.

It is appealing to attribute the patterns of State differences in educational and occupational attainments to State differences in educational systems and in economic prosperity reflected in labour markets. While this may be true in part, we cannot be definitive about the reasons for these differences. We can, however, be definitive about the State differences among early school leavers. Other things equal, the simple fact of living in SA means consistently higher educational attainments, less time to find a job after leaving school but lower participation in further education, and more unemployment. The situation in Queensland is similar except that early leavers tend to take longer to get their first job, on the average, than they do in other States except WA and Tas. Most other State effects on occupational attainments fail to reach statistical significance.

It is important to keep in mind that these State effects are net of whatever State differences might occur as a result of population differences between the States, for example, differences in the ethnic, socioeconomic and rural compositions of this cohort; and, where occupational attainments are concerned, net of the State differences in achievement that we have noted. Individuals otherwise equal in these

Table 5.2 State, School and Ethnicity Effects Expressed as Adjusted Deviations from the Grand Mean

Dependent Variables

Independent Variables	Schooling Completed	Time to Job 1	Ever Unemployed	Months Unemployed	Attempted Full-time Study	Planned Full-time Study	Present Job
Net State Effects							
ACT	-0.14	-0.47	-0.05	0.13	-0.04	0.14	-2.94
NSW	-0.28	0.01	-0.02	-0.43	0.09	0.08	3.43
Vic.	0.11	-0.64	-0.04	-0.06	-0.02	0.00	-1.49
Qld.	0.08	0.64	0.06	0.53	-0.10	-0.13	-0.87
SA	0.39	-0.64	0.03	0.45	-0.10	-0.08	-5.36
WA	0.15	0.83	-0.02	0.16	0.03	0.02	-0.50
Tas.	-0.12	0.65	0.01	-0.11	-0.01	-0.07	-4.10
NT	0.17	-0.53	0.04	-0.83	0.03	0.12	23.77
Net School System Effects							
Government	-0.03	-0.03	0.01	0.05	-0.01	-0.01	-1.15
Roman Catholic	0.18	0.20	-0.09	-0.74	0.07	0.04	10.86
Independent	0.22	0.05	0.10	1.26	-0.01	0.10	-6.75
Net Ethnicity Effects							
Australian-born	-0.03	-0.17	-0.01	-0.12	-0.01	-0.01	-0.02
English-born	-0.04	-0.02	0.06	0.65	-0.01	-0.04	-1.81
Non-English-born	0.19	0.97	0.03	0.02	0.07	0.06	1.93

respects experience differences in educational and occupational attainments as a function of their geographical location in Australia. Of course, we do not attribute these effects to geography as such but suggest instead that they reflect, at least, between-State differences in the structure and process of education, the health of the economy, and the buoyancy of the labour market.

School and Family Effects

Table 5.lb contains the data in question. As before, these effects are net of all other influences shown in the model such that the effect of a variable represents differences in outcome among individuals different on the variable in question but alike in all other measured respects.

School System Effects

As noted earlier the two variables capturing attendance at non-Government schools are dummy variables whose effects are interpreted relative to the omitted group, Government schools. Where educational attainments are concerned, an Independent school education seems to be an advantage as the first two columns in Table 5.lb show. Early leavers from these schools evidence higher attainments than their State-school counterparts, and in no instance are they disadvantaged in these respects. For example, other things equal, early leavers from the non-State schools obtain an average of one-quarter of a years extra schooling than similar leavers from State schools. Keep in mind that we are controlling for the socioeconomic selectivity of these systems so the effects are not due to between-school differences in the leavers' social origins. As with State effects, we are measuring aggregate residual effects associated with school type in these variables and, thus, cannot be definitive about their meaning. Nevertheless, the data do show that even among those who do not complete high school, other things equal, those who attend non-Government schools do better on our measures of achievement and in terms of the amount of schooling they acquire.

These school system influences carry through to occupational attainments as well. Whatever it is that a Catholic school education provides - perhaps more of the traditional occupational virtues, as one neoconservative commentator suggested (Harris, 1979) - it is beneficial for early school leavers. Although early leavers from Catholic schools take longer to get their first job, they are less likely to have ever been unemployed (-0.10), experience some eight-tenths of a month less unemployment (-0.79), have current jobs whose status is 12 points higher - approximately the difference between service station attendant (430) and a panel beater (444), for example (Broom et al., 1977:108) - and expect to have jobs in five years time whose status is 14 points higher than the expectations of Government-school students.

Table 5.1b School and Family Effects on the Educational and Occupational Attainments of Early School Leavers

	Independent Variables									
	SCHOOL			FAMILY						
Dependent Variables	Cath. School	Indep. School	School Rurality	English Born	NonEnglish Born	Family Rurality	Family Size	Father's Occupn.	Father's Edn.	Mother's Edn.
Word Knowledge	1.44	3.71	*-0.42*	*-0.57*	*-0.88*	*0.16*	-0.32	*0.80*	*0.40*	*0.41*
Literacy	*0.67*	1.24	-0.55	*-0.39*	*-0.87*	*0.30*	-0.25	0.37	*0.23*	0.35
Numeracy	*0.24*	*1.12*	-0.91	*-0.50*	*-0.34*	*0.26*	-0.27	0.43	*0.15*	0.58
Schooling Completed (years)	0.21	0.25	0.08	*-0.01*	0.22	*-0.02*	-0.04	0.10	*-0.02*	0.07
Post-School Experience (months)	-1.41	*-0.88*	*-0.74*	*-0.72*	-3.45	*-0.16*	0.22	-0.70	0.70	-0.60
Attempted Further Study?	0.08	*0.00*	-0.05	*0.00*	0.08	*-0.00*	*-0.01*	0.03	*0.01*	*-0.00*
Further Study Plans?	*0.05*	*0.11*	-0.06	*-0.03*	0.07	*-0.02*	*0.00*	0.05	*0.01*	*-0.00*
Time to First Job (months)	*0.23*	*0.08*	*-0.30*	*0.15*	1.14	*0.08*	*0.07*	*0.02*	-0.27	*-0.03*
Satisfaction with First Job	*0.12*	*0.12*	*0.10*	*0.15*	*-0.03*	*-0.02*	*-0.01*	0.09	*0.01*	*0.06*
Ever Unemployed?	-0.10	*0.09*	*-0.00*	0.07	*0.04*	*-0.02*	0.01	-0.03	*0.00*	*-0.01*
Months Unemployed	-0.79	1.21	*0.04*	0.77	*0.14*	*0.05*	0.18	*-0.18*	*0.09*	*0.01*
Status of 'Present Job'	12.01	*-5.60*	*-1.50*	*-1.79*	*1.95*	*-0.25*	*-0.90*	*1.92*	*2.00*	*-0.25*
Status of Expected Job	13.91	30.25	*-3.63*	9.79	*-0.32*	5.99	*0.48*	*-0.83*	4.58	*2.83*

Note. The coefficients shown indicate school and family effects, other things equal.

While these effects might have been expected, those of Independent school education are not, insofar as occupational attainments are concerned. In terms of early occupational attainments these students have been unemployed, on the average, 1.21 months longer, are somewhat more likely to have experienced unemployment (0.09), and are working now in jobs of somewhat lower average status than their Government-school counterparts. Yet in five years these adolescents expect to be working in an occupation with a status, on the average, 30 points higher than their Government-school analogues.

These same effects are apparent in the second panel of Table 5.2. On the average, early leavers from the non-Government schools leave school later than their Government school counterparts, though they take somewhat longer to get their first job. Once in the workforce, differences between pupils from the two independent systems emerge. Early leavers from the Catholic schools are less likely to have been unemployed (-0.09) and those from the Independent schools more likely (0.10). Similarly, the alumni of the Catholic schools experience less unemployment (-0.74) while those of the Independent schools have more (1.26) than the bulk of the population which attends the several Government system schools. Similarly, more of the Catholic school early leavers have attempted further study (0.07) and, on the average, they attain higher status occupations (10.86) than their Independent school analogues.

Two general patterns of effects need explanation. Why do early leavers at both non-Government school systems achieve at a higher level, other things equal, than Government school students? And, why do early leavers from the Catholic schools do best in the workforce and those from the Independent schools fare worst of all? In Chapter 4 we suggested an answer to the first of these questions when the same pattern of effects was seen in the total sample, and in Chapter 6 we take up these issues again.

An answer to the second question is more speculative. Perhaps students at Catholic schools get a traditional education and learn the traditional values that employers see as desirable. They are more acceptable to employers as a result, either because they exhibit these virtues and/or because employers think they have them.

The explanation of the disadvantage suffered by the Independent school early leavers is more speculative still and the meaning assigned must be seen as tentative. We assume in the first instance that the effect is not due to the education per se; Independent schools probably do not teach anti-work attitudes, and employers probably do not discriminate against early school leavers who have attended these schools. If the effect is not due to the schools as such, it seems likely to be rooted in between-system differences in family background not controlled in these analyses. We have no measure of family income, for example. Although we do control for part of between-family differences in this resource through our controls on parental occupational and educational attainments, it is only a part, as the correlation between income and these attainments is of the order of 0.3 to 0.5 (Jones et al., 1977:63). Thus, residual resource differences between families across the two systems may be responsible; early school leavers from Independent schools may have sufficient family financial backing to be choosy about their jobs. However, it is probably more than simple resource differences between families. Some part of the justification for choosing an Independent school education must rest on the premise that it provides a better start in life. Since such families may be more willing to invest in a 'better' start through a 'better' education we suggest that, resource differences aside, they may also be more willing to support a period of unemployment while their offspring search for the right occupational niche.

School Rurality

As discussed earlier, our measure of school rurality is an aggregate measure of the family rurality of the twenty-five students sampled in each school. We assume that schools differ in their rurality directly with the average level of the rurality of their students. If one does not accept this assumption, then we are measuring the effects of 'peer rurality'. If we do accept the assumption that, for the most part, rural children attend rural schools, and urban children attend urban schools, then we are tapping the variety of rural school disadvantages noted by the Schools Commission, as well as 'peer rurality'.

Net of other influences, the more rural the school attended the lower the levels of Word Knowledge, Literacy and Numeracy of early leavers (the coefficients -0.42, -0.55 and -0.91 respectively). However, an examination of the metrics of the variables suggests that the effects are relatively minor: other things equal, schools at the extremes - the most urban and most rural of the schools - produce a net difference of one and one-half points in Word Knowledge, two points in Literacy and three points in Numeracy, on the average. Since these tests have ranges of between 30 and 40 points even the effects of extreme school rurality on achievement are fairly small. Early leavers from these same extreme schools differ by three-tenths of a year in schooling completed, on the average, favouring the more rural schools. Participation in further education though suffers from a rural education as the negative coefficients relating to 'attempted further study' (-0.05) and 'further study plans' (-0.06) indicate. Where occupational attainments are concerned the effect of a rural education is negligible with two exceptions. The more rural the school, the less time it takes to enter the workforce (-0.30) and the more satisfied is the early school leaver (0.10). Thus, overall there appear to be some minor educational disadvantages associated with a rural education, and an advantage in the tendency to stay in school a little longer, but as far as occupational attainments are concerned a rural education is neither better nor worse in its effects than one obtained in an urban school. Given the restricted job opportunities in rural areas one might assume, first, that the rural students stay in school longer because they see few jobs available in the local area, and second, that the apparent absence of occupational disadvantage comes about because rural youth move to the city in search of employment where they seem to compete on equal terms with urban youth.

Ethnicity

Educational disadvantage is traditionally associated with membership of ethnic groups. In examining this assertion our data limit us to fairly coarse measures of ethnicity. In fact, our measures are measures of 'migrancy' and 'mother-tongue' combined. Respondents who are members of ethnic groups but who were born in Australia are not distinguished from other Australian-born members of the sample and, thus, some group differences may be obscured. Nevertheless, our measure does seem to capture those members of ethnic groups at most risk: those with the least exposure to acculturating influences; and those with the greatest degree of language disadvantage.

The use of two dummy variables to capture the ethnic origins of our respondents means that effects are interpreted relative to the omitted group, those born in Australia. Ethnic effects on educational achievement for the 'English-born' group are not statistically significant though they show a consistent degree of disadvantage in the negative signs of all the coefficients. Their occupational attainments, however, are somewhat more affected. Early school leavers in this ethnic group experience less satisfaction with their first job (-0.15), are more likely to have seen some unemployment (0.07) - on the average about three-quarters of a month (0.77) over that of Australian-born respondents - and expect to have somewhat higher status jobs in five years, higher by about 10 points on the average.

Non-English-born early leavers show lower levels of Word Knowledge, Literacy, and Numeracy, as one might expect, though the coefficients do not reach statistical significance. However, other things equal, they stay at school an average of two-tenths of a year longer (0.22), are more likely to have attempted further study (0.08) and to plan on doing more (0.07). Where occupational attainments are in question there is little evidence that this group is disadvantaged, although they take a little more than a month longer to get a job after leaving school (1.14) relative to Australian-borns.

The lower panel in Table 5.2 shows the comparative effects across the three groups. Other things equal, non-English-born early leavers leave later than the other groups, take longer to find their first job, are less likely than the English-born to have suffered unemployment, and more likely than the Australian-born, with the same pattern holding for duration of unemployment. In addition, they hold marginally higher status jobs than either the Australian-born or the English-born, other things equal, and are more likely to have attempted and plan on further education.

Overall, ethnic disadvantage seems to be concentrated where we would least expect it, among migrant families whose mother-tongue is that of their adopted country. Early school leavers among the migrants from English-speaking nations, while showing negligible disadvantage within the schools, show a degree of disadvantage in the labour market. On the other hand, their counterparts from non-English-speaking nations are not significantly disadvantaged, on the whole, within the schools except for their literacy skills and, apart from taking longer to find a job, are not significantly different from Australian-born respondents in their occupational attainments. In fact, tests of significance aside, they do somewhat better. We suggest three possible explanations but have no way of knowing the truth of any within the confines of our present data: first, the existence of a general discrimination against migrants in the workplace, offset, for the non-English-born school leavers, by the availability of jobs in a less competitive ethnic job market; second, the possibility of differences in achievement values between the groups; third, we may have underestimated parental occupational and educational attainments in the non-English-speaking group through the reporting of current parental status which may be different from status prior to migrating. As a result, socioeconomic and educational differences in family background between the groups may not be adequately controlled and, hence, will appear as ethnic differences.

Rural Origins

The issue is one of whether the rurality of the area in which the respondent's family lived (in 1975) influences current educational and occupational attainments; in short, whether distance from the cultural provisions of urban centres, resource disadvantage engendered by isolation, a predominance of agricultural occupational models, a restricted range of job opportunities, and the relative mix of Gemeinschaft and Gesellschaft value orientations characteristic of the respondent's immediate neighborhood - and, we assume, his family as well - affects these attainments. The answer seems to be no. Respondents coming from rural family origins do somewhat better in each of the three measures of educational achievement though the coefficients do not reach statistical significance. Educational attainments measured as year level completed are also unaffected by the rurality of one's family. Occupational attainments are similarly unaffected with the exception that the more rural the respondent's origins the higher his occupational expectations for five years hence. Each unit of family rurality - the range is seven - produces a 6-point increase in the status of the occupation expected, a 42-point difference from the most rural to the most urban of families in favour of the early leavers from rural families.

The most striking observation to make about the effects of rurality, whether family or school, is that, contrary to expectations, it seems to make only a small difference to occupational attainments, other things equal. The concern we sometimes see over the plight of rural youth (cf. Gilmour and Lansbury, 1978) seems not entirely warranted. Our data suggest that, other things equal, rural youth suffer no major disadvantage in terms of getting a job. This does not mean that rural youth are not disadvantaged in the job market, if one considers that having to leave home to get a job is a disadvantage. In rural areas the jobs are limited and, most likely, we find no rural disadvantage because most of these early school leavers move to the cities in search of work. Once there they compete in the same market as urban youth and, apparently, on the same terms.

The Family Environment

Under this heading we have grouped the effects of the respondent's immediate family environment: the siblings; the social and economic statuses, values and occupational models that are associated with the occupation of the principal breadwinner, usually fathers; and the educational ethos of the home, insofar as we can capture this with measures of parental education. Family size exerts a consistent negative effect on educational attainments, an effect which is consistent also with general findings on the influence of family size. Other things equal, each additional brother or sister costs 0.32 of a point in Word Knowledge, 0.25 of a point in Literacy, and 0.27 of a point in Numeracy. Each sibling also costs 0.04 of a year of overall schooling. Marjoribanks (1979) reviews the explanations for family size effects on educational attainments in some detail. Typically, these explanations adopt a 'sharing of resources' perspective where resources are broadly defined and range from material to parental contact.

These effects persist through to occupational attainments though with less force. Other things equal, each extra sibling increases the likelihood of having experienced unemployment (0.01), and adds 0.18 of a month to the total period out of work. An explanation for the occupational effects, which are net direct effects, is not immediately obvious, though they too may reflect a similar sharing of parental resources where these are encouragement and assistance in obtaining work.

The effects of father's occupation have been scaled by a factor of one hundred such that the coefficients shown represent the effects of a 100-point difference in occupational status. Effects on educational attainments are consistently positive as one would expect. Respondents whose fathers' occupations differ in status by 100 points also differ by one-tenth of a year of schooling completed, other things equal. With the exception of a small effect on unemployment (-0.03), a father's own occupational attainments do not affect those of the next generation directly. That is, family status appears not to be a direct advantage or disadvantage in the labour market for early school leavers. Occupational attainment for this group seems to be essentially a meritocratic process, at least as far as family background is concerned.

Parental educational attainments operate similarly, affecting the educational attainments but not occupational attainments of these early leavers to any marked degree. Thus, while having parents with high status jobs and high levels of education helps their educational attainments, and through these their occupational attainments, these family attainments seem to have no direct influence in the marketplace itself.

Individual Effects

The effects in question are contained in Tables 5.1c and, with the exception of sex, represent the effects of educational attainments on occupational attainments net of State, family and school influences.

Sex

In both tables the effect of sex is consistent. While not statistically significant, the coefficients for Word Knowledge and Literacy favour females, but females score lower on Numeracy (-0.65), are less likely to attempt further study (-0.06) or plan on further education (-0.11). They take one and one-third months longer to get a job, are unemployed on the average 1.33 months longer than males, and are more likely to have been unemployed (0.13) since leaving school. Against these consistent negative effects of being female, females do attain higher status jobs - being female is worth some 15 status points for current job - and expect to be in higher status jobs in five years time. However, in good part this is a function of the kinds of jobs seen as appropriate for females. If we look back to Table 4.17 we see that most females enter clerical or shop assistant occupations, whereas males enter occupations somewhat lower in status and predominantly male preserves - the armed services, craftsmen, operatives, labourers.

Consistent sex differences of this kind taken with much of the available evidence suggest that we may have oversimplified our model in this respect. Quite possibly the social processes implicated in educational and occupational attainment are not the same for males and females, and there is evidence that this is so (cf. Spaeth, 1977; Sturman, 1979). Thus, assuming an additive effect for sex probably oversimplifies things and we should look at an interactive model. Separate analyses by sex have been undertaken and will be discussed in a later report. Nevertheless, the present data seems convincing evidence that some form of disadvantage exists in the labour market for females who leave high school before graduating. We are unable to indicate the mechanisms involved with the data at hand, though the increasing presence of married women in the workforce and the replacement of unskilled labour by machines may be contributing factors.

Table 5.1c The Effects of Sex, School Achievement, Educational Attainments and Post-School Experience on the Educational and Occupational Attainments of Early School Leavers

Independent Variables

Dependent Variables	SEX	ACHIEVEMENT			ATTAINMENT	EXPERIENCE	PROPORTION OF EXPLAINED VARIANCE
	Respondent's Sex	Word Knowledge	Literacy	Numeracy	Schooling Completed	Post-School Experience	
Word Knowledge	*0.36*						0.06
Literacy	*0.26*						0.09
Numeracy	-0.65						0.10
Schooling Completed (years)	*0.02*	0.01	0.02	0.02			0.24
Post-School Experience (months)	-0.93	*-0.06*	*0.06*	*0.02*			0.08
Attempted Further Study?	-0.06	*0.00*	*0.01*	0.01	0.07	*0.00*	0.08
Further Study Plans?	-0.11	*0.00*	0.01	*0.00*	0.06	*0.00*	0.09
Time to First Job (months)	1.36	0.03	*0.04*	*-0.02*	-1.08	-0.21	0.23
Satisfaction with First Job	*-0.09*	*-0.00*	*-0.01*	0.02	*0.02*	*0.00*	0.03
Ever Unemployed?	0.13	*-0.00*	*0.01*	-0.01	-0.14	-0.01	0.11
Months Unemployed	1.33	*-0.02*	0.08	-0.11	-1.74	-0.07	0.15
Status of 'Present' Job	15.13	0.38	*-0.49*	1.25	11.89	0.25	0.13
Status of Expected Job	10.22	0.76	*-0.92*	*0.85*	10.32	*-0.21*	0.08

Note. The coefficients shown indicate sex, educational achievement, educational attainment and experience effects, other things equal

Schooling

In this section we describe the way in which educational achievements and attainments - Word Knowledge, Literacy, Numeracy and length of schooling - are translated into occupational attainments during the early career of early school leavers. For reasons already noted, we cannot readily interpret the effects of 'post-school experience' and we do not, with one exception. Nevertheless, it remains an important control variable for the reason that other effects are net of differences in opportunity, labour force experience, and periodic fluctuations in the demand for labour.

School Achievement. The coefficients shown in Table 5.1c show that among the school leavers in our sample, the capabilities measured by Word Knowledge contribute in a minor way to time to first job (0.03), and occupational status, present (0.38) and expected (0.76). Individuals scoring at the extremes of this test are separated by 52 Word Knowledge points. Thus, other things equal, compared to the highest scorers, those at the absolute lowest level would obtain a job one and one-half months earlier, but obtain occupations of somewhat lower status (20 points). The net effects of literacy capabilities on occupational attainments are minor. The more literate are likely to be unemployed somewhat longer (0.08) and expect lower status jobs in five years (-0.92). The effects of numerical skills are another matter. Educational attainments of this kind have consistent direct effects on occupational attainments; other things equal, the more numerate are more satisfied with their first jobs (0.02), are less likely to have experienced unemployment (-0.01), have been unemployed for a shorter time (-0.11), and have higher status jobs and expectations. Persons scoring at the extremes of the 33-point range of the test differ by 3.6 months in total unemployment, and 41 points in current occupational status - the difference between, for example, a policeman (508) and a trainee nurse (467).

Schooling Completed. With one exception, the effects of years of schooling completed all achieve statistical significance. Each extra year of schooling completed increases one's likelihood of having attempted or having plans to undertake further education. Each additional year of schooling decreases by one month the time it takes to find a job after leaving school (-1.08), other things equal, decreases the probability of having ever been unemployed (-0.14), and decreases total unemployment by one and three-quarter months, on the average (-1.74). Each additional year spent in school is worth, ceteris paribus, 12 additional points of current occupational status and 10 points of expected status. In short, each extra year that early school leavers spend in school increases their chances of finding a job quickly and increases the status of their job while at the same time reducing the likelihood and length of unemployment.

Post-school Experience. This variable is interpretable as period effects in one instance, namely 'time to first job', and the coefficient shown (-0.21) suggests that, other things equal, the time it takes to find a job has increased over the period 1976 to 1979 presumably as a result of an increasingly tight job market.

Mastery Scores. At this point we should also consider the alternate form of the literacy and numeracy measures, that is, whether the student in 1975 could be regarded as having mastered the requisite skills, or not (see Bourke and Keeves, 1977). The data in question is shown in Table 5.3. Consistent with the data shown for the total test score measure, having achieved mastery of the defined literacy skills has a negligible net effect on occupational attainments with one exception. The most notable effects are on educational attainments in school and after leaving. Those who have mastered Literacy stay on an extra 0.14 years on the average and are more likely to have attempted further education and to plan on undertaking more. The total score effects are paralleled also when the mastery form of the numeracy measure is used. Those who have mastered the numerical skills defined complete one-quarter of a years extra schooling, on the average, are more likely to have attempted further education, are more satisfied with their first job (0.20), less likely to have experienced unemployment (-0.10), have been unemployed 0.93 months less on the average, have current jobs whose status is 13 points higher and have job expectations 9 points higher than those who could not demonstrate mastery of these skills.

Schooling, Skills and Employment

Part of the debate surrounding explanations for youth unemployment concerns the claim by some employers that schools do not prepare youth well enough in the basic skills of literacy and numeracy to enable them to be productive workers. This, of course, is only one thread of the argument; the argument that there has been an erosion of the work ethic is propounded as well by neoconservative commentators, and underlying all of this is the structural/economic explanation - there are simply not enough jobs, for reasons of a slow-growth economy, displacement by technology, and so on (see Windschuttle, 1979).

We can contribute something to this debate by examining the relative effects of Word Knowledge, Literacy and Numeracy and schooling completed on occupational attainments. These effects are both direct and indirect. The direct effects are captured by the coefficients shown in Table 5.1c and, thus, are net of State, school, family, sex and attainment influences. In other words, they are effects that arise from differences in these achievements among early leavers otherwise equal in all measured respects including amount of schooling completed. Indirect effects arise because these achievements affect the amount of schooling completed and, through this, occupational attainments.

Table 5.3 Net Effects of Mastery of Literacy and Numeracy on Educational and Occupational Attainments

	Independent Variables		
Dependent Variables	Literacy Mastery	Numeracy Mastery	Proportion of Explained Variance
	Metric Coefficients		
Schooling Completed (years)	0.14	0.24	0.23
Post-School Experience	*0.05*	*0.35*	0.08
Attempted Further Study?	0.06	0.07	0.08
Further Study Plans?	0.07	*0.05*	0.10
Time to First Job (months)	*0.19*	*-0.11*	0.23
Satisfaction with First Job	*-0.04*	0.20	0.03
Ever Unemployed?	0.06	-0.10	0.11
Months Unemployed	*0.34*	-0.93	0.15
Status of 'Present' Job	*-0.10*	12.85	0.13
Status of Expected Job	*-4.58*	8.54	0.08
	Standardized Coefficients		
Schooling Completed (years)	0.08	0.14	
Post-School Experience	*0.00*	*0.02*	
Attempted Further Study?	0.06	0.07	
Further Study Plans?	0.07	*0.05*	
Time to First Job (months)	*0.02*	*-0.01*	
Satisfaction with First Job	*-0.02*	0.08	
Ever Unemployed?	0.05	-0.09	
Months Unemployed	*0.04*	-0.10	
Status of 'Present' Job	*-0.00*	0.13	
Status of Expected Job	*-0.03*	0.06	

Note. Only the (net) coefficients for the effects of the Mastery scores are shown. Coefficients for the other variables differ very little from those shown in Tables 5.1a to 5.1c and for this reason are not repeated in this table.

If the 'inadequate preparation' argument holds, we might expect employers to discount certification by schools in the form of year-levels of education completed and engage in some type of evaluation of their own, either through overall impressions in interviews and, perhaps, informal testing in job situations, or by developing formal testing arrangements as some did in the ACT during 1979. Under these circumstances we would expect to find sizeable direct effects of Word Knowledge, Literacy and Numeracy on occupational attainments and smaller effects due to years of schooling completed. Alternatively, if employers on the whole trust the schools to teach adolescents these skills, then the direct effects of the three achievement measures will be small, and that of 'years of schooling' relatively large, as those with more schooling will be seen as having higher levels of these skills.

Since the basis of the argument advanced rests on the relative size of the structural coefficients we must consider standardized coefficients - partial regression coefficients expressed in standard deviation units rather than in their original metrics. Those with a useful interpretation are shown in Table 5.4. Note that, although effects of State, school system and ethnicity are not shown, the coefficients in Table 5.4 are net of the influence of these variables.

Among the displayed influences on years of schooling completed, that of Numeracy is the most important; other things equal, a one-standard deviation difference in Numeracy is associated with a 0.16 standard deviation difference in years of schooling completed by early school leavers. Family size, father's occupation, Word Knowledge and Literacy are of roughly equal influence and next in importance, followed by school rurality and mother's education.

In examining the competing arguments advanced above, the coefficients of interest are the relative effects of the three achievement variables and years of schooling on occupational attainments. In the case of 'time to job 1', the effect of schooling completed is three times that of the one achievement variable to reach statistical significance, and the effects are opposite in sign. This dominance of the schooling effect carries through all the occupational attaiments measured: the schooling effect is twice that of Numeracy (-0.22 v. -0.10) for the measure, 'ever unemployed'; the effect of schooling on 'months unemployed' is more than twice that of Numeracy (-0.32 v. -0.14), the largest achievement effect; and schooling exceeds Numeracy by 50 per cent in their relative effects on job status (0.20 v. 0.14). Three aspects of these patterns of effects are notable. First, among individuals with similar capabilities in Literacy and Numeracy, those with more schooling are advantaged in the labour market; other things equal, extra years of schooling pay off in less time to find a job, less unemployment and a higher status job. Even among early school leavers, the more schooling one gets the more employable one becomes.

Table 5.4 Standardized Effects of Selected Variables on Educational and Occupational Attainments of School Leavers

	Selected Independent Variables										
Dependent Variables	School Rurality	Family Rurality	Family Size	Father's Occupation	Father's Education	Mother's Education	Word Knowledge	Literacy	Numeracy	Schooling Completed	Post-School Experience
Word Knowledge	*-0.04*	*0.02*	-0.08	*0.10*	*0.05*	*0.04*					
Literacy	-0.09	*0.05*	-0.13	0.09	*0.05*	0.07					
Numeracy	-0.11	*0.05*	-0.10	0.07	*0.03*	0.09					
Schooling Completed (years)	0.07	*-0.03*	-0.10	0.11	*-0.03*	0.07	0.11	0.09	0.16		
Post-School Experience	-0.05	*-0.02*	0.05	-0.07	0.07	-0.05	*-0.05*	*0.03*	*0.01*		
Attempted Further Study?	-0.07	*-0.01*	*-0.04*	0.06	*0.02*	*-0.00*	*0.01*	*0.06*	0.07	0.11	*0.04*
Plans for Further Study	-0.08	*-0.03*	*0.01*	0.09	*0.02*	*-0.01*	*0.01*	0.07	*0.05*	0.10	*0.00*
Time to First Job	-0.05	*0.02*	*0.04*	*0.01*	-0.06	*-0.01*	0.07	*0.04*	*-0.02*	-0.22	-0.47
Satisfaction with Job 1	0.06	*-0.02*	*-0.02*	0.07	*0.01*	*0.04*	*-0.02*	*-0.05*	0.12	*0.02*	*0.04*
Ever Unemployed?	*-0.00*	*-0.04*	0.06	-0.06	*0.01*	*-0.01*	*-0.02*	*0.05*	-0.10	-0.22	-0.21
Months Unemployed	*0.01*	*0.01*	0.08	*-0.04*	*0.02*	*0.00*	*-0.03*	0.07	-0.14	-0.32	-0.14
Status of Present Job	*-0.02*	*-0.01*	*-0.04*	*0.04*	*0.04*	*-0.00*	0.06	*-0.04*	0.14	0.20	0.05
Status of Expected Job	*-0.03*	0.09	*0.01*	*-0.01*	0.06	*0.03*	0.09	*-0.05*	*0.07*	0.12	*-0.03*

Note. The coefficients shown are net of the influence of State, school system and ethnicity although these variables are not shown in the table

Seeing that those early school leavers with more schooling find jobs more quickly we assume that employers value whatever it is that adolescents learn in school - those who have more of it take less time to find a job. Moreover, we interpret the fact that, other things equal, those with more schooling get 'better' jobs and suffer less unemployment, to mean that more schooling leads to higher productivity on the job, productivity that is rewarded with continuous employment.

Secondly, the literacy skills captured in the Word Knowledge and Literacy test scores have small and inconsistent effects on the several occupational attainments measured. Among early school leavers who have completed the same number of years of schooling and are otherwise equal in the respects measured, the more literate are not advantaged nor are the less literate disadvantaged. Possibily this reflects the fact that the literacy demands of the occupations open to early school leavers are not more than those of common discourse and, given that they all can speak, literacy skills are largely irrelevant to employers in selecting among job applicants, and for performance on the job.

Third, among early school leavers otherwise equal, the numerical skills tapped by the Numeracy test - taking measurements, adding, subtracting, multiplying and dividing, reading graphs and tables, using decimals, counting money and the like - seem not to matter in finding a job but have pronounced effects on keeping one. Among individuals with the same amount of schooling and who are otherwise equal, those who are more capable numerically suffer less unemployment, are more satisfied with their first job, and have a higher status current job. This suggests that while employers are generally unable to evaluate the numerical skills of job applicants - they put their faith in years of schooling, the school's certification of these skills - they do evaluate their employees in this way. Other things equal, those who can count and measure are more likely to hold a job than those less skilled, presumably because they are more productive. Moreover, given the established link between mathematical skills and general intelligence, the more numerate may be those who are generally 'brighter' as well, something which also comes through in on-the-job performance.

In short, we find little evidence that employers are discounting the school's certification of student capabilities. In finding a job, early school leavers are evaluated principally in terms of the amount of schooling they have had. Employers probably have little else to go on, and it seems to be a reasonable criterion anyway. Other things equal, those with more schooling suffer less unemployment and have higher status jobs. We interpret this to mean that they are more productive and are rewarded accordingly with 'better jobs' and continuity of employment. However, there is some support for the argument that early school leavers are not well prepared in basic skills, at least basic numerical skills. Proficiency in numerical skills seems to be valued and rewarded by employers as, other things equal, the most skilled suffer less unemployment. Presumably, if the general level of basic numerical skills was sufficient for the kinds of occupations open to early school leavers - as it appears to be in the case of literacy - then we would not expect it to be an important influence in the transition and early career of these individuals.

The Early Career

In this chapter we have attempted to map the influence of regional, school, family, and individual factors on the educational and occupational statuses of early school leavers, and to show the manner and magnitude of their influences. The questions we asked and the framework which guided both the formation of the questions and the data analyses were designed to address the five terms of reference for the Study of School Leavers. Our findings are summarized below.

State Effects

We found, other things equal, that the attainments of these early school leavers were affected by the State in which they lived. We attributed State differences in educational attainments to differences in curricular emphases and perhaps to differences in the definition and implementation of minimum school leaving age regulations. State differences in occupational attainments were attributed to differences in labour markets, and these come the closest to evidence of structural influences on employment that we have at this time.

School System Effects

We looked too at the effect of obtaining an education in a Government, Catholic or Independent school. Other things equal, a Catholic school education seems to benefit the educational and occupational attainment of these early school leavers. By contrast an Independent school education is good for one's educational status, but less healthy for early occupational attainment. We speculated that the families of these individuals were willing to offer continued support during this period, enabling them to remain out of work in order to find their right occupational niche. The respondents themselves expected to be better placed occupationally in five years than did those with a State school education.

Ethnicity Effects

Whatever the characteristics that derive from an individual's ethnic background, their influence in these processes is patterned according to the mother-tongue of the respondent's birthplace. Those born in an English-speaking country outside Australia suffer no educational disadvantage but were somewhat disadvantaged in their employment prospects vis a vis the Australian-born respondents. While those born in a non-English-speaking country appeared to suffer some language problems in school, they completed more schooling and planned on further education more than did Australian-borns. And, although they took longer to get their first job, overall, the effects of ethnic group membership on occupational attainments were marginal for these individuals. We suggested a variety of possible explanations ranging from protected ethnic job markets to measurement error.

Family Effects

Among the family background variables family size showed a consistent disadvantaging influence and we calculated the cost to the respondent of each brother and/or sister he/she had. For total unemployment, each sibling cost the respondent almost four days without work, on the average. We were unable to offer a convincing explanation for these net effects on occupational attainments; they were not a function of parents retaining some children at home to help with the work as very few of these early school leavers report 'home duties' as their occupation. We did speculate that they may be due to a decrease in parental encouragement and assistance in finding a job with increasing family size, but we are not really convinced that this is the answer.

The effects of family social and economic statuses, as these were reflected in parental occupation and education, were much as one would expect; other things equal, the higher the socioeconomic attainments of one's family of origin, the higher one's own attainments. However, these influences were confined to effects on educational attainments and we attributed the effects to differences in the environments provided within families. The direct transmission of status from one generation to the next is minimal among early leavers. Status is inherited because the attainments of one generation lead to enhanced educational attainments in the next and, through these, to enhanced occupational attainments. This is consistent with the findings of status attainment models generally (cf. Broom et al., 1980).

Rural Origins and Rural Education

We considered two aspects of rural influence on the career opportunities of youth. The first was the effect of being reared in a rural environment, in a rural family whose behaviours, values, and models were likely to be different from families in urban areas. Second, we considered the effect of undertaking one's education in a rural school with the apparent opportunities and limitations inherent in this. The findings suggest that, other things equal, it does not matter much for educational and early occupational attainments where these school leavers were reared. If there are, in fact, differences in the behaviours, values and models between rural and urban families they do not seem to matter. However, being educated in a rural school matters a little in that it affects adversely Literacy, Numeracy and entry into further education, while having the positive effect of keeping rural youth in school a little longer, on the average. Once out of school, the rurality of one's education seems to occasion no disadvantage. Thus, other than the disadvantaging indirect effects that a rural education has via Literacy and Numeracy capabilities, which are small, the occupational attainments of rural youth are unaffected by the fact that they are rural. In short, these data suggest that the career opportunities for rural early school leavers are little different from those of early school leavers in general. Given the fact of limited job opportunities in rural areas, we suggest that rural-urban migration of youth lies at the root of this phenomenon. Even so, rural origins and a rural education seem to offer no particular disadvantage in the urban job market.

Educational Achievements and Attainments

Years of schooling completed emerged as the dominant educational effect on occupational attainments. Among these early leavers each extra year of education beyond the minimum school leaving age paid off in reduced time taken to find a job, a job with higher status, and less unemployment. We saw this dominance of educational attainment over the Literacy and Numeracy measures as evidence contradicting the often-voiced opinion that employers were dissatisfied with the way in which the schools were preparing youth in the basic skills. If they were dissatifisfied then more 'inadequate preparation' should not matter to them, but it does.

The literacy skills tapped by the Word Knowledge and Literacy tests had little effect on occupational attainments. In explaining this we suggested that the literacy requirements of jobs open to early school leavers may be at the level of common discourse and that employers see schooling as an adequate preparation. In contrast we noted the direct effects that Numeracy had on occupational attainments after entry into the workforce. The more capable one was in this respect the higher one's occupational attainments, other things equal, including years of schooling: less time to first job; less likely to have been unemployed, fewer months of unemployment; and higher status occupation. Two explanations were suggested: while employers do not seem to select among job applicants on the basis of their numerical skills, they do evaluate their employees in this way, rewarding the numerically more capable with continued employment; and, that the Numeracy test also taps general intelligence which is similarly rewarded by employers. It is this general 'brightness' of the more numerate school leavers that advantages them in the labour market as well, other things equal.

Sex

The most consistent effect overall was that of sex, and, with the exception of occupational status, sex tended to work to the disadvantage of females. Other things equal, they tended to be less numerate, but more literate, to not undertake further study or plan to in the future, to take longer to find a job, to be unemployed for a longer period, and to be more likely to have experienced unemployment. Even the occupational status advantages are a function of the fact that some kinds of occupations are more open to them than others, and these happen to have a higher status than those entered by male early leavers.

CHAPTER 6

YOUTH IN TRANSITION

We take the chapter title from a study by Bachman et al., (1969; 1970; 1971; 1978) which had similar aims and a degree of success in following a sample over time that we aspire to, and because it implies the purposes of this chapter. These are to consider the way in which the evidence presented so far speaks to major questions about youth in transition from high school to work or to further education. The questions were posed in the terms of reference for the study and we speak directly to those we are able to address with data from this first phase of the study. Because this is meant to be a summary chapter, and for some readers may be the only chapter read, we repeat many of the findings discussed in earlier chapters. Thus, for those who have read the whole report we may seem unduly repetitious - and we are, but for good reason.

We consider four sequential stages in the transition process: the decision to leave school early; the transition from school to work; the early career of early school leavers; and the future, in the sense of the educational and occupational expectations that early school leavers have. Our data impose limitations on what we can say now about each phase. Those of our sample still in school were in their final years of high school in 1978 so we are limited here to an examination of a decision made in high school, that is, whether to leave school early or to stay on through Year 12. Data from the second phase of the study will allow us to look at influences on a decision that high school graduates must make, namely, whether to continue with further education, or look for a job.

Similar limitations apply to our data on the transition period itself. In this report we can examine the transition of early school leavers only, and just two aspects of this: the time it takes to find a job, and whether the job taken was the kind of job wanted or whether it was taken simply because it was a job. The second wave of data will allow an extension of this examination to high school graduates entering the workforce, and also to those who enter tertiary education.

At present we have only three categories of information on the early career and future expectations of early school leavers, namely: the status of their occupation in the summer of 1978-79, and that of the job they expect to have in 1984; length of unemployment; and entry, actual or planned, into further education. Our phase two report will elaborate this to include details on movement in and out of the workforce, reasons for leaving jobs, income, valued job characteristics, quality of life, job anxieties, and further education entered into or contemplated.

The Transition Process and the Terms of Reference

The terms of reference for the study cross-cut the four stages of the transition process outlined and most of the issues raised are pertinent to each stage. Thus, rather than address the terms of reference directly, considering them one by one, we thought it might be more illuminating to discuss the process of transition sequentially and within each stage address the major concerns expressed in the terms of reference. As we interpret them, these are: the effects of the 'structure, timing and content of secondary education'; the 'critical points in school...where...failure or...choices made have predictable long term effects'; the effects of 'school attainment and length of schooling'; and the effects of 'social background, sex, ethnic origin and geographical location' (see Chapter 1).

We are not able to deal at present with the 'timing' component noted in the first of these but can go some way toward looking at the effects of the structure and content of secondary education, albeit somewhat indirectly and not separately. Structural and content differences between State educational systems are captured in our measures of State of residence, those between Government schools and the non-Government schools in our measures of school type (Government, Catholic, Independent), and whatever differences may exist between rural and urban schools in our measure of school rurality.

On the matter of 'critical points in school' we can say something about the effects that failure to master Literacy and Numeracy at age 14 has on the decision to leave school early, and about the effects that the choice of when to leave early has on the transition and the early career. By so doing we can provide some preliminary evidence on the characteristics of students who might be thought to be 'at risk', the risk being that of leaving school early and/or becoming unemployed.

Similarly, the analyses provide evidence on the link between 'attainment' (we call it achievement) and 'length of schooling' (we call this attainment), on the effects of achievement on the decision to leave, and on the relative effects of school achievement and attainment on the transition and the early career. In doing this we provide some evidence on the issue of whether the schools provide an adequate preparation in the basic skills, in the eyes of employers.

Finally, because the model guiding the research project allows for the effects of membership in a variety of subpopulation groups we can examine the basic equality of opportunity issue posed in the fifth term of reference. This is addressed in the effects of the several social background variables including ethnicity, geographical location and the respondent's sex. Our measures of the rurality of both family and school allow an examination of the 'plight' of rural youth within this context. In addition, this fifth term of reference asks that we look at the influence of these variables on achievement in school. As a precursor to the four stages of the transition process we deal with it first.

Equality and Achievement

The model guiding our analyses was shown in Figure 4.1 and the results were detailed in Chapter 4. Consistent with our methodological orientation we expressed the effect of each variable shown as an effect net of all other specified and potentially confounding influences on the phenonemon of interest. In other words, we were able to say 'other things equal, the effect in question amounts to...'. And, in the interests of providing concrete interpretations we devoted most attention to the metric form of these structural coefficients.

In this and in the following section on the decision to leave school, the total sample of 4919 individuals comes under examination. The model guiding the analyses postulated effects on achievement from four groups of variables; State, school, family, and sex. Three measures of achievement were considered - Word Knowledge, Literacy and Numeracy - and the data on each were obtained in 1975 as part of the Literacy and Numeracy study. Our analyses and those reported in 1977 in Volume 3 of the Literacy and Numeracy report (Bourke and Keeves, 1977) are not directly comparable because somewhat different analytical models and techniques were used in each case.

State Effects

The net effects on achievement of living in one State rather than another are shown in Table 4.1 as effects relative to living in NSW, and in Table 4.2 as adjustments to a grand mean. This is illustrated most clearly in Table 4.2.

That is, in comparison with students like them in all other respects measured - school system attended, rurality of the school, father's occupation, father's and mother's education, family size, family rurality, ethnicity, and sex - students in the ACT do better on Word Knowledge and Literacy than students in the other States. Similarly, other things equal, students in Qld do better in Numeracy than do students in the ACT and other States. These effects are illustrated more concretely still in Table 4.3 which presents effects on mastery of Literacy and Numeracy. Although not statistically significant, State effects on Literacy suggest that, other things equal and relative to students in NSW, some two per cent more ACT students achieve mastery, three per cent more achieve mastery in Qld and four per cent more achieve mastery is SA. Where Numeracy is concerned, other things equal, some ten per cent more students in Qld achieve mastery, relative to NSW, with seven per cent more in the ACT, four per cent more in SA, but four per cent less in Vic., three per cent less in WA and two per cent less in Tas.

If these findings were simple averages they would probably be dismissed as spurious, a function of the higher general socioeconomic status of ACT students in the first two instances. But we have controlled statistically for socioeconomic differences, along with a variety of other differences noted above so, in effect, we are looking at differences among students alike in all these respects, except the State in which they live. One is left then with the likelihood that the State effects shown represent State differences in the practice and provision of education. And, in fact, there is evidence that this is the case in Qld where the relative amount of time devoted to mathematics exceeds that in the other States (Keeves, 1968; Rosier, in press). The numerical superiority of Qld students may result from the fact that they spend more time on mathematics.

Unfortunately, we cannot give unequivocal interpretations of these effects. We must always allow for the possibility that there are important population differences between the States that we have not measured, population differences that affect educational achievement and are relatively unrelated to the characteristics that have been measured. Nevertheless, by demonstrating that State effects persist even after controlling for a variety of potentially confounding between-State population differences we have weakened the argument that observed State differences in achievement are just a function of population differences; we have also provided support for an interpretation that sees effects on achievement from differences in what States do and provide in education; and we have made the question 'Why?' worth asking. We are suggesting, then, that the identification of those practices and provisions that vary between States and are likely to affect achievement would be a worthwhile piece of research. It is made more so by the fact that differences in educational practice and provision are most amenable to policy action.

School System Effects

Our data demonstrate apparent advantages to a non-Government school education (see Tables 4.1 and 4.2). Other things equal, students attending either Catholic or Independent schools have higher average levels of achievement in Word Knowledge, Literacy and Numeracy than do students attending Government schools. As before, we are comparing students alike in all other measured respects and differing only in the school system attended. The differences are not very remarkable at face value though they are statistically significant. In Word Knowledge, among individuals otherwise equal, those in Catholic schools average some three points above those in Government schools, and those in the Independent schools average some 3.67 points above the former. The analogous figures for Literacy are 1.14 points and 1.28 points. For Numeracy these values are respectively, 0.62 and 1.57 points. It is important to keep in mind that these are differences between means and represent fairly substantial differences in overall achievement between these groups, differences apparently brought on by the school system itself rather than by characteristics of the students. In fact, the extent of these differences is illustrated more concretely in Table 4.3 where we examined effects on mastery scores. Other things equal, some ten per cent more

Catholic school students and nine per cent more Independent school students achieve mastery of Literacy relative to students in Government schools. Similarly, compared with Government school students like them in all other respects, some three per cent more Catholic school students achieve mastery of Numeracy while ten per cent more Independent school students achieve this level in basic numerical skills.

As with State effects, and for the same reasons, we are unable to unequivocally attribute these differences to differences in what the three school systems do and provide for their students. However, because we have controlled on a variety of socioeconomic and related population characteristics we have weakened the traditional argument that attributes observed system differences in achievement to socioeconomic differences in student populations. At the same time we have strengthened the often enthusiastic, but rarely documented, claims for the virtues of a non-Government school education. Logically we cannot dismiss either argument though we seem to have shifted the weight of evidence. If these data do, in fact, point to between-system differences in educational practice and provision affecting achievement then it is now worth asking just what it is that the three systems do differently that affects student learning. Oddly enough this question seems not to have been the subject of much research interest in the past.

Rural Students

In contrast, we are unable to find any clear evidence that rural children are very disadvantaged, at least as far as these three measures of educational achievement are concerned. Coming from a rural family seems to make no statistically significant differences to achievement and, in fact, appears to be an advantage for Literacy and Numeracy. Similarly, the effects of attending a rural school, other things equal, fail to reach statistical significance though they indicate some disadvantage for achievement in both Literacy and Numeracy. This lack of disadvantage is likely to be one of our more controversial findings because it runs counter to prevailing opinion. However, we point out that, while there is general agreement that rural children are disadvantaged educationally, there is little empirical support of more than an anecdotal nature for this assertion. Most likely rural students are disadvantaged by the isolation and limited provision they experience; however, this disadvantage seems to have little effect on the learning of basic skills. It is important to keep this in mind for at least two reasons: first, we should not expect programs designed to offset rural disadvantage to produce large gains in achievement; and second, we might think of asking the research questions of just what are the effects of being educated in a rural school if achievement in basic skills seems not to suffer, and are they necessarily a disadvantage?

Ethnicity

A degree of disadvantage was clear, however, for students born outside Australia in a non-English-speaking nation. Other things equal, they performed at a consistently lower level on all three achievement measures. Two further observations attributed this to language disadvantage. First, those born outside Australia in an English-speaking nation were not different to Australian-born students, so it was not the status 'migrant' that mattered. Second, the degree of disadvantage paralleled the verbal requirements of the tests. The introduction of programs of remedial English and/or bilingual teaching for these students seems an appropriate recommendation. Such programs are in existence but seem not to reach all those in need (Martin, 1978: 124).

Family Background and Sex

Family background effects on achievement were consistent, as we have come to expect, especially those of family size, father's education and father's occupation. Our explanations conformed to those usually advanced to explain these effects namely, that families advantaged socially, educationally and economically by the attainments of parents provide environments better able to nurture the growth of those skills that underlie achievement in school. Statistically significant sex differences were found only for Literacy and favoured females. However, females scored higher on the Word Knowledge as well, reaffirming their traditional capabilities in verbal skills, but fared worse than males on the Numeracy test, other things equal. These findings are consistent with most of what we know about sex differences in achievement (cf. Walker, 1976:228).

The Decision to Leave School Early

Here, and in subsequent sections that discuss findings on the other three stages of the transition, we group the concerns of the terms of reference under three headings: the effects of the structure and content of education are considered under 'Structure/Content'; concerns expressed in the third and fourth terms of reference are treated in sections labelled 'Critical Points: Failure and Choice'; and the several influences of subpopulation group membership noted in the fifth term of reference are considered under the heading 'Equality'. We follow this with a section entitled 'Youth at Risk' in which we consider for each stage of the transition the way our data illuminate who is at risk, what more we need to know, and what might be done to reduce this risk.

Structure/Content

In all subsequent discussion we will identify the concerns of the first term of reference in this way with three sets of observations. First, insofar as we capture differences in the structure and content of secondary education in variables that identify

'State/Territory of residence', other things equal and relative to NSW students:

i some 22 per cent more ACT students stay on in school;

ii four per cent more of Vic. students stay on;

iii nine per cent fewer Qld students stay on to the senior years of high school;

iv ten per cent fewer SA students stay on;

v seven per cent fewer WA students stay in school; and

vi thirteen per cent fewer Tas. students stay on to the final years of high school. See Tables 4.1 and 4.2.

Second, differences between the Government and non-Government school systems are apparent as well, other things equal:

i relative to students in Government high schools, other things equal, eleven per cent more Catholic school students stay on in school; and

ii eighteen per cent more Independent school students stay on to the senior years of high school. See Tables 4.1 and 4.2.

Third, the net effect of the degree of rurality of a school is to decrease students' chances of staying on by some two per cent for each unit of rurality, other things equal. Seeing that the range of school rurality is 3.6 units, this represents a difference of 7.6 per cent between the most rural and the most urban schools.

Because of the possibility that there are other unmeasured influences on this decision we cannot unequivocally attribute the effects of State of residence to differences in structure and content between State educational systems, nor can we attribute the differences between the Government and non-Government schools, or the differences between the Catholic and Independent schools themselves, to differences in the nature of education as this might be expressed in different educational structures and educational content. For example, as noted earlier, there may be a transfer of academically talented students from Government to non-Government schools during the senior years, and a reverse flow of the less talented. If so this would appear as spurious system effects on holding power. We simply cannot be certain with the data we have at present. Nevertheless, given the number of variables that we have controlled and the persistence of the State and school system effects, it seems reasonable to suggest that some part of these demonstrated system differences is due to what the schools do differently in each case. We raised the possibility that differences in the quality of school life, from the students' perspective might be involved.

In the past, system differences of this kind have been demonstrated but usually without controlling for the confounding effects of other influences and, as a result, have been reasonably easy to dismiss on the grounds that they are spurious and simply reflect average between-system differences in the characteristics of students; for example, average socioeconomic differences between the 'elite' selective non-Government schools and Government schools which must cater for all who wish to enter. Given the variety and theoretical pertinence of our statistical controls and the persistence of these system differences, the notion that some school systems may do things differently, and better, becomes harder to ignore. We have done no more than to increase the probability that such effects exist. Seeing that they are effects of system variables, at least in part, and because system variables are most susceptible to policy manipulation, we suggest that research aimed at identifying the reasons for these system differences has a high probability of pay-off in direct action.

Critical Points: Failure and Choice

Under this heading we examine the effects of 'educational failure' and educational achievement generally on the decision to leave school early. We have no information yet on educational choices which may influence this decision and are limited in our measures of failure to mastery of Literacy and Numeracy at age 14.

Other things equal, failure to master either Literacy or Numeracy at the prescribed levels by age 14 increases by 0.09 in each case the probability of leaving school early (see Table 4.3). That is, other things equal, nine per cent more non-masters of Literacy become early leavers and, other things equal, nine per cent more non-masters of Numeracy become early leavers relative to those who have mastered these skills. Looking at the total scores rather than the mastery scores (Table 4.1), and at the standardized coefficients, points up the somewhat equal influences of Word Knowledge and Numeracy, influences that are twice that of Literacy. This probably means we are tapping general ability with the Word Knowledge and Numeracy tests as well as acquired skills. Thus, we are left with a somewhat unremarkable conclusion: failure to assimilate what schools value, teach and - most importantly - reward, increases the likelihood of giving up what must be an unrewarding way of life.

Equality

We use this term to identify discussion of issues raised in the fifth term of reference, and in this discussion we include effects on achievement as well as on the decision to leave school early.

The general educational disadvantages of living in rural areas are well known: 'isolation, non-access to cultural facilities such as theatres, libraries and television, the range and level of local employment and the educational levels and incomes of families' (Schools Commission, 1975:75). Schooling in rural areas appears to suffer as well from high teacher turnover, a lack of specialist services, a restricted range of curriculum options for students, and a high proportion of young inexperienced teachers posted there by their Departments (cf. Schools Commission, 1975: 75-79). Concerns of this kind have generated programs that offer compensatory funds and services to rural schools disadvantaged in these ways.

However, much of this evidence seems to come from broad observation alone. As the Schools Commission (1975:75) points out: 'Comparison of educational achievement between city and country children is difficult. These difficulties are partly related to those of defining "country"... . We believe we have defined and operationalized 'country' with an index of the degree of rurality of students' families and their schools and, thus, we offer the following observations on the effects of rurality on achievement and retention in school.

While none of the effects reach statistical significance they suggest that, other things equal, students attending rural schools are somewhat disadvantaged when it comes to learning the basic skills captured in the Literacy and Numeracy tests and are a little less likely to stay on to the senior years of high school (see Table 4.1). The effects of family rurality, as distinct from school rurality, also fail to reach statistical significance. Nevertheless, they point to the possibility of a slight disadvantage in Word Knowledge together with some advantage in Literacy and Numeracy, and a negligible effect on staying in school. Thus, it is not families so much that disadvantage rural youth in educational achievement as it is the schools they attend. However, these effects are small in absolute terms and in comparison with the effects of parental educational and occupational attainments. Two polar explanations of these minor differences are plausible: either programs designed to compensate for rural disadvantage have worked so well that there is little rural disadvantage now; or, contrary to expectations, there was very little in the first place.

The effects of ethnicity are more clear cut. Migrants born in English-speaking nations suffer only minor disadvantage in the schools, as far as our measures of achievement are concerned. Other things equal, some five per cent fewer English-borns achieve mastery of Literacy and two per cent fewer achieve mastery of Literacy, relative to Australian-born students. However, migrants born in non-English-speaking nations are disadvantaged, other things equal, in their educational achievements, but not in their probability of staying on in school. Relative to Australian-borns like them in all other measured respects, eleven per cent fewer non-English-borns achieve mastery in Literacy and six per cent fewer master Numeracy. However, some 19 per cent more stay on to the final years of high school. This suggests to us first, that ethnic disadvantage in schools is a function of language and not of the status 'migrant'; and second, that the parents of those disadvantaged by language encourage adaptation to the demands of the dominant culture probably as a path toward social mobility. The suggestion then, is that those students disadvantaged by language are likely to be more willing to correct this disadvantage given the opportunity, questions of multiculturalism aside.

Social background effects on achievement have a consistency we have come to expect. Family size shows consistent negative effects and parental education positive effects on achievement, but not on the decision to leave school early. Father's occupation is the one social background variable with consistent effects on both achievement and the decision to leave or stay.

Significant sex differences are limited to an advantage for females on the Literacy tests.

Students at Risk

If we think of students 'at risk' as being those who become early school leavers, then two policy options are feasible, and several not so. Although State, type of school attended, and family background affect both achievement and the decision to leave school early there is not much that can be done at present without knowing the specifics of the processes involved. Within the limits of our data we can demonstrate these net effects and suggest that they make a case for research into the specifics of their action, but other than that at present we must treat these influences as situational variables, variables not amenable to policy action but whose effects must be controlled in the analysis (Coleman, 1972:3).

Two influences on early leaving do seem amenable to policy action. Our analyses suggest that students from a non-English-speaking background are disadvantaged in high school largely as a function of language. Even though these students are, other things equal, more likely to stay on in school, their language disadvantage affects early leaving indirectly via achievement. Given the language disadvantage and an apparent commitment to education evidenced by their higher probability of staying on to the senior years of high school, we suggest that English language programs coupled with some bi-lingual teaching/counselling within schools would be both acceptable and beneficial to the students. In short, there is a case for compensatory language programs for students born in non-English-speaking nations where such programs do not exist currently. Note, however, that we are using achievement data collected in 1975. It is possible that this language disadvantage no longer exists because of action that the schools have taken in the intervening period and this qualifies our observations. However, as noted earlier, both our data and our recommendation seem to have currency still: language programs in existence do not seem to reach all those in need (Martin, 1978); and in the Galbally Report there is a strong recommendation that they should (Australia, 1978). We will be able to address this issue directly in the near future with data on the national sample of 14-year-olds contacted as part of the Vocational Decision-Making Study noted in Chapter 1

Our second point concerns the apparently trite observation that, other things equal, those who do not do well at school become early school leavers. Those who have failed to master the basic literacy and numeracy skills seen as the minimum requirement for successful functioning within Australian society, other things equal, are more likely to leave the one institution designed to give them these skills. We suggest reasons why these students leave early, argue that they should not leave without these basic skills, and advance an argument that is not new about how one might retain these students and teach them the basic skills they need.

In the evolution of schools two influences dominated the content and form of instruction: schools were designed originally to educate the offspring of a small elite, not to provide education for all; and their instructional heritage is that of 'mind-training'. As a result, success in school has come to depend on a particular set of abilities: a relatively long attention span; verbal comprehension; the ability to manipulate symbols rather than things; the capacity for covert problem solving; and the capacity to manipulate actively the symbolic instructional input to produce new and/or augmented cognitive schema, in essence, to engage in self-instruction (cf. Jensen, 1970); in short, cognitive abilities. Students with high levels of these capabilities do well in school, are rewarded accordingly, and stay in school. Students with less conceptual capability cannot easily handle the predominantly cognitive mode of instruction and its substance, do not do well by the standards applied, are not rewarded and see little point in continuing in an institution that promises more of the same. The problem is that some of them leave without the minimum levels of competence needed to function effectively in the society at large, and leave the one societal institution charged with providing these competencies. As Jensen (1969:116) points out 'Too often, if a child does not learn the school subject matter when taught in a way that depends largely on being average or above average on g cognitive abilities , he does not learn at all, so that we find high school students who have failed to learn basic skills which they could easily have learned many years earlier by means that do not depend much on g .

Such methods utilize the associative abilities of children who have difficulties learning in the cognitive mode. These approaches contain components of drill and rote learning and have been used with effect with disadvantaged children; see Bereiter (1969). Although these methods are often objected to, the point is that the methods schools use currently fail to reach 20 per cent of the students. Moreover, when properly designed and implemented, methods that encourage learning by repetition need not be boring or otherwise unpleasant. Lurie's (1980) description of a Japanese kindergarten in which the children learn by the Suzuki method is a case in point. Meaningful repetition in situations where the practical application of the learning is apparent and, in fact, is the substance and method of the learning may provide for those 20 per cent of youth who fail to master basic skills in Literacy and Numeracy before leaving school. 'Understanding' in an abstract, verbal, cognitive sense need not be a prerequisite for the learning of basic skills. It should be for those that are cognitively capable, but there are other ways for those who are not as capable. In short we are arguing for an instructional pluralism which recognizes that different aptitudes require different treatments to ensure that all individuals develop the competencies needed to function effectively. Along with this schools would need to develop assessment procedures and reward structures that recognized a plurality of instructional methods and the existence of more than one kind of learning.

The Transition of Early School Leavers

It is important to keep in mind that we are talking here and in subsequent sections about early school leavers and not about the age cohort generally. Among other things, this group has limited educational attainments and the effects of these on the transition and the early careers may be markedly different than the analogous effects for the age group as a whole. For example, if credentialism is a strong force in occupational attainment for the population as a whole, and we have reason to suspect that it is (Broom et al., 1980), it is irrelevent for the present analyses as early school leavers have no educational credentials to speak of. We examine two aspects of the transition to work - the time it takes to find a job, and satisfaction with that first job.

Structure/Content

State influences on the transition are apparent in the net effects of State on 'Time to Job 1' (see Table 5.2), but are small for the satisfaction measure. Other things equal, early school leavers in ACT, Vic. and SA take one-half to two-thirds of a month less to find a job while those in Qld, WA and Tas. take six-tenths to eight-tenths of a month longer. It is unlikely that we can attribute these effects to State differences in the structure and content of education. More likely, they reflect State differences in the permeability of those sections of the labour market relevant to early leavers.

The net influences of school system attended - Government versus non-Government - on the time it takes to find a job fail to reach statistical significance though early school leavers from both non-Government systems seem to take longer to find their first job - for Catholic school students this amounts to two-tenths of a month longer. However, other things equal, early leavers from rural schools find their first job more quickly and, overall, it appears to be the job they 'really wanted'. Neither effect is statistically significant.

Thus, allowing for the apparent differences in State labour markets, and for the variety of family and achievement characteristics noted, school system attended seems to offer no particular advantage either in the eyes of employers or through the provision of employment gaining skills or attributes. Early school leavers from all three systems compete on a fairly equal footing for their first job; in fact, early leavers from

Government schools may do somewhat better, other things equal. However, contrary to prevailing belief, early leavers from rural schools do better than their urban counterparts in finding work and, moreover, find the job that they want. They may have to move to urban areas to do this - we cannot tell from our data - but they seem to find the job they want sooner.

Critical Points: Failure and Choice

Other things equal, failure to master Literacy and Numeracy at age 14 makes no statistically significant difference to the time it takes early school leavers to find their first jobs. In fact, those who have mastered Literacy take some two-tenths of a month longer than non-masters, while those who have mastered Numeracy find their first job one-tenth of a month sooner and do somewhat better in finding the jobs they want (see Table 5.3).

However, when we consider the decision to leave early as a choice of when to leave, we see that, other things equal, each additional year of schooling reduces by one month the time it takes to find that first job (cf., Table 5.1c). Presumably, employers see extra schooling as being of benefit to them, probably in the form of less time and training needed for the employee to reach full productivity, even among these early leavers. This finding is somewhat inconsistent with the argument that the schools are failing to provide the basic skills training needed, at least from the point of view of employers. Our data suggest that, other things equal, more schooling makes early leavers more employable.

Equality

When other things are taken into account, geographical location as captured in 'family rurality' makes no significant difference in the transition from school to work for early leavers (see table 5.1b). To the extent that we tap this construct as well in our measure of 'school rurality', as noted, the more rural are the more advantaged.

Relative to those born in Australia, early leavers born in non-English-speaking nations take a little more than a month longer to find their first job, though early leavers born outside Australia in English-speaking nations are not reliably different from Australian-borns. We presume that, as for achievement in school, a non-English language and background is something of a handicap in finding a job in a tight job market. However, as a group they do not differ from the Australian-born in their satisfaction with their first job, though the English-born do, in that they are less satisfied.

Social background effects are limited to an effect of father's education on the time it takes to find a job - those with more educated fathers take less time - and to an effect in the expected direction of father's occupation on satisfaction. Sex effects, on the other hand, are more substantial, with female early leavers taking some 1.4 months longer to find their first job, other things equal (see Table 5.1c). We cannot attribute this unequivocally to some form of sex discrimination since it is equally plausible that there are labour market differences in the availability of jobs between those categories typically 'female' and those that males enter.

Students at Risk

Other things equal, some early leavers will be at risk during the transition because of the State they live in. We assume that the observed State effects on the time it takes early leavers to find their first job reflect State differences in permeability of labour markets. The number and kinds of jobs available to early leavers varies with the nature of State economies. Effects of this kind are beyond policy control except of the most radical nature and, thus, we do not consider them further.

The findings of most interest are those pointing to the general non-influence of the ascribed characteristics of family background, school attended, and school achievement on the time it takes to find a job after leaving school. The one thing that seems to matter is the number of year-levels of education completed. Although employers may say that the schools do not offer an adequate preparation in the basic skills they seem to accept the school's certification of the early leaver in the form of year-levels completed, and perhaps they have little choice. As far as we can see from these analyses, at the time they are selecting among job applicants, employers take little account of whether the early leaver went to a Government or non-Government school, whether he/she lived in the country or city, whether they exhibit middle-class or working-class values, attitudes and behaviours, and whether they are able to demonstrate capabilities in basic skills. Employers seem to ask just one question; 'How far did you go in school?'. Finding a job seems to be a fairly meritocractic process, though there is evidence that non-English-borns suffer some disadvantage, as do females. We are unable to tell why the ethnicity effects persists - it may be some kind of discrimination on the part of employers - but the sex effect is probably due to a reduced number of relatively unskilled 'female' jobs being available. This may be due to the increased numbers of married women returning to the workforce and/or to the increased automation of these jobs, but we have no way of knowing for certain.

To summarize, our analyses leave us certain that those at most risk during the period between school and work, in the sense of finding it harder to get a job, are those who leave school at the earliest opportunity. Finding a job seems to be a meritocractic process in which years of schooling is the criterion applied by employers. (While this may seem to be another instance of 'documentation of the obvious', what is 'obvious' is not always documented by fact, as we have shown in other instances, and what is documented is, at times, not obvious.)

The Early Career

Our measures of the early career are limited to measures of unemployment and occupational status. The two measures of unemployment - 'Ever Unemployed?' and 'Months Unemployed' are referenced to December 1978, while occupational status is that of the job held at the time of completing the questionnaire or, if unemployed, the last main job held. Since these early school leavers left school at different times we saw the need to control for three additional influences on their occupational career: its length which, though short, is a measure of the opportunity to attain occupational status, to become unemployed and to accumulate human capital in the form of experience; and the time of entry into the workforce, a measure of the influence of periodic fluctuations in the labour market. We control for the effects of these variables in a measure of the time the early school leaver has been out of school, but we are unable to separate out their several influences and, thus, we do not interpret the variable 'post-school experience'.

Structure/Content

State effects on both unemployment and occupational status are limited. Relative to those in NSW, early leavers in Qld and SA experience an average of almost a month more unemployment, other things equal, and the average status of the jobs held is somewhat lower in SA. We assume that this reflects State differences in buoyancy of labour markets.

School system effects not present during the transition re-emerge once the early leaver enters the workforce. Other things equal, 10 per cent fewer early leavers from Catholic schools have experienced unemployment compared with those who attended Government schools. Moreover, early leavers from Catholic schools have been unemployed, on the average, more than three-quarters of a month less than Government school early leavers like them in all other measured respects. The reverse is true for early leavers from the Independent schools who have a greater probability of seeing some unemployment vis a vis Government school early leavers and, on the average, are unemployed nearly one and one-quarter months longer. Moreover, ceteris paribus, Catholic school early leavers show significantly higher occupational attainments during this period, that is, end up in 'better' jobs.

Since the type of school attended made no difference during the transition we can reasonably assume that these school effects are not due to 'old-school-tie' sponsorship. If they were we would expect to see the non-Government school early leavers find a job more quickly. Thus, they appear to be due to something that the non-Government schools do for their students, or to some unmeasured difference between the students in these schools, perhaps something about families who send their children to non-Government schools. We invoke both explanations.

First, we see our data as being consistent with the view of one neoconservative commentator whose experience as an employer leads him to be critical of schools, with one exception: 'if figures were ever extrapolated...youth unemployment would be markedly lower among former students of Roman Catholic schools. If the job applicant comes from St Murgatroyd's, you feel you've got a possible. Roman Catholic education still involves some effort to retain the teaching authority of the school' (Harris, 1979). More generally, we infer that early leavers from these schools may have more of the traditional occupational virtues that employers value and, apparently these are demonstrated to employers on the job. Contrary to Harris' observation, employers on the whole seem not to be influenced by the type of school attended when they recruit early leavers but it turns out that early leavers from the Catholic system seem to give employers what they want, and are rewarded accordingly with less unemployment and higher status jobs. Alternatively, these traditional occupational virtues are present in, and passed on by, the families that send their children to the Catholic schools. We are unable to tell whether one or the other, both, or neither explanation is correct.

Second, since we do not think that the Independent schools teach their early leavers occupational vices - there is ample evidence that their graduates do well in the workforce - we invoke the population differences argument to explain the apparant disadvantage of this group. One would guess that, other things equal, the parents of these students believe strongly that one's start in life depends in good part on one's education. They have demonstrated this through their willingness to support financially a 'better' education for their children. It is a logical extension to assume that they would also attempt to facilitate this 'better' start in other ways as well; in the case of early leavers by relieving them of the need to hold a job while they look around for the right occupational niche.

Critical Points: Failure and Choice

The two measures of school 'failure' that we have are the mastery scores on Literacy and Numeracy. Oddly enough, failure to master Literacy seems to be good for early leavers; other things equal, six per cent more of those who mastered these skills have never been unemployed and, on the average, those who have mastered these skills are unemployed 0.34 months longer. A straightforward labour market interpretation seems implausible, unless one argues that the more literate early school leavers become bored with the kind of jobs early leavers get, their productivity falls and they suffer unemployment as a result - or by choice.

In the case of mastery of basic numerical skills, both effects are in the expected direction and are statistically significant. Ten per cent fewer of those demonstrating mastery of Numeracy have ever experienced unemployment, other things equal, and on the average this group experiences a month less unemployment, and obtains higher status jobs than does the group who failed to master these basic numerical operations. Although they do not take competency in these skills into account directly during the selection of employees, preferring instead to accept the schools' certification of students, employers seem to evaluate these skills independently on the job and reward the most proficient with continuous employment. In later discussion we suggest why this may be so.

On the question of choice, it matters a great deal when early school leavers leave. Each extra year of schooling they choose to receive, other things equal, decreases their probability of unemployment by fourteen per cent, decreases their overall unemployment by one and three-quarter months, and finds them jobs some 12 points higher in status, on the average.

Equality

Coming from a rural family or from a rural school has no significant influence on either unemployment or occupational status, though the data indicate that rural early leavers are marginally disadvantaged in these respects. Statistically significant ethnicity effects are confined to the English-born group; compared with Australian-born early leavers, they are more likely to have been unemployed at some time and, on the average have been unemployed for three-quarters of a month longer. Why this should be so it is difficult to say. It is not a language problem, nor is it solely the status of 'migrant' because, although the non-English-born group shows parallel differences from Australian-borns, these differences are much smaller and fail to reach statistical significance.

Social background effects are small and limited to the influence of family size and father's occupation on unemployment. Early leavers from large families are more likely to have experienced unemployment and to have been unemployed longer. Early leavers from socioeconomically advantaged families are advantaged in both these respects. Sex effects are another matter. Other things equal, female early leavers enter higher status occupations but this seems more a function of the kinds of jobs open to them - mainly clerical (see Table 4.17) - than a reflection of advantage in the labour market. However, females are more likely to have experienced unemployment and, on the average, are unemployed one and one-third months longer than are male early leavers, simply as a function of being female.

Whether this reflects some form of discrimination by employers, or differentials in the availability of jobs between 'male' and 'female' occupations - perhaps, as a function of married women entering the workforce and/or increasing automation of unskilled 'female' jobs - we cannot say. Whatever the reason, other things equal, being a female early leaver is not good for one's employment prospects.

Youth at Risk

With a couple of exceptions, early school leavers are at risk or not according to their merits. Other things equal, the risk of unemployment is greatest for the least schooled and the least skilled of the school leavers. The evidence of our data seems at odds with the argument that employers see the schools failing to provide an adequate training in basic skills. If this were so, the amount of schooling ought to matter little to employers - the extra years of inadequate preparation counting for little - yet the evidence suggests that it matters a great deal both for unemployment during the early career and for the status of the occupation attained. Whatever it is that schools provide over and above basic skills in Literacy and Numeracy, apparently it increases productivity because those who have more of it have a reduced risk of unemployment.

In a section of Chapter 5 entitled 'Schooling', Skills and Employment' we discussed the meaning of the patterns of effects of schooling and skills on the transition and early career. We take the point up again here and refer mainly to the data displayed in Table 5.4. In looking at the relative effects of skills and schooling on employment the following pattern emerges. In terms of the time it takes to find a job, those with the most schooling find one sooner. Competence in basic skills appears to exert little direct influence though, of course, it does influence employment indirectly because it affects years of schooling completed. We interpret this to mean that employers are not engaging in an independent evaluation of the basic skills of job applicants. They seem to accept the schools' certification of these skills in the form of years of schooling and, in fact, they may have little choice unless they engage in testing programs of their own. Moreover, since few of the ascribed characteristics of early leavers matter we argue that early school leavers are hired on the basis of their merits where these are calculated as year-levels/grades/forms completed. Other things equal, someone who completes Year 11 will find employment one month sooner than someone who left school at the end of Year 10.

While early leavers tend to be hired on their merits they tend to be fired on their merits as well. The patterns of influence we see suggest that employers evaluate the on-the-job performance of their employees, especially their numerical skills. It seems likely that most early leavers can handle the literacy demands of the occupations open to them as the effects of Literacy on unemployment are minor. However, while numerical skills have no direct effect on finding a job they have pronounced effects on keeping one, and on the status of the job itself. Other things equal, including the amount of schooling completed, it is the more numerate who keep their jobs longer and who end up in 'better' jobs. We see this finding to be consistent with the claim that some early school leavers leave school without the basic numerical skills needed in the jobs open to them - the ability to measure, read graphs, count money, add, subtract, divide and multiply. The more numerate are able to handle the demands of their jobs, and their productivity is rewarded. We also noted that the Numeracy tests may tap general intelligence as well as numerical skills so that the more numerate are generally 'brighter' as well. This is just one plausible interpretation. It is also possible, in whole or in part, that seeing that there are not enough jobs to go around, employers select the best on the basis of a valued productivity-enhancing skill in which most might be adequately prepared but some more than adequately. The competing explanations for our findings do not allow policy recommendations based on these data. Logically, we are unable to say that more schooling and more training in numerical skills will alleviate youth unemployment. It may re-distribute youth unemployment but, given that the basic problem is structural unemployment, it can not do more.

There are other aspects of merit it seems. No matter what the level of their numerical skills, those early leavers with the most schooling suffer less unemployment. Thus, we assume that there is something more to schooling than the learning of basic skills alone, something probably productivity-enhancing on the job and rewarded by employers with continuous employment. If we consider these attributes to be attitudinal then it may be that the longer one stays in school the more one embraces the attitudes characterized as the 'Protestant ethic' - 'self-discipline, self-examination, hard work, dedication to duty...systematic profits, reinvestment of earnings, thrift and hard work' (Theodorson and Theodorson, 1970:319) - attitudes basic to the development of capitalism and, presumably, valued by employers. This would be consistent too with the finding that, other things equal, early leavers from Catholic schools experience less unemployment though they experience no advantage in the time it takes to find a job. As noted earlier, at least one well known commentator on education, and an employer, sees this to be a truth (cf., Harris, 1979). In any case, it would be of value to find out what it is about these school leavers that advantages them in the job market, and to trace this back to the education they received. For example, if the Catholic schools are most successful in inculcating these patterns of work-related values in early school leavers, then the school practices that contribute to this learning - if that is true - are important to know about. However, whether such practices should be more widespread is not a research question.

The Future

Our knowledge of how early school leavers in Australia see their future is limited to three variables: the status of the occupation they expect to have in 1984 (note that this measure is limited by some 30 per cent non-response); whether they have attempted further study since leaving school; and whether they plan to undertake further education. We include the measures of further education because the replacement of unskilled or semiskilled labour by technology makes further education very much a part of the future of early school leavers.

Structure/Content

In terms of the occupation expected in 1984, State effects consistently fail to reach significance except for Vic. Where participation in further education is at issue, State effects are not insignificant and are notable for their consistency. Relative to early school leavers in NSW, and other things equal, early leavers in all States are less likely to have undertaken further education or to plan on it (with one exception, six per cent more ACT students plan on futher education). Whether this is indicative of State differences in the attractiveness of the education provided in high school or the further education itself, in awareness on the part of early leavers that further education is possible, or in the provision of this kind of education we cannot say from these data. Given the likelihood that early leavers will need retraining at some time in the future if they are to remain employed, it might be important to know why, other things equal, early leavers in most States are less likely to participate in further education than are those in NSW.

The effects of attending a non-Government school relative to a Government school suggest that early leavers from these schools see a brighter occupational future for themselves, particularly those from the Independent schools who see themselves in occupations whose status is, on the average, 30 points higher than those named by State school leavers. This finding is consistent with our interpretation of the apparent early career disadvantage of early leavers from these schools as really a reflection of a more extended search for the right occupational niche.

Effects on participation in further education are insignificant with the single exception of Catholic school leavers who are more likely to have attempted further study. The effects of school rurality are to decrease the likelihood that early leavers from rural schools will undertake further education. While we might interpret the Catholic school effects as further evidence of the Protestant ethic at work, the meaning of the rurality effects is unclear.

Failure, Choice, Achievement and Attainment

Consistent with our earlier observations on achievement, reward and early leaving, failing to master basic Literacy and Numeracy skills increases the probability that early leavers will not go back to school to obtain more education. On the other hand, those early leavers who stay at school longer and, presumably, like it a little better, are more likely to participate in further education; each extra year of schooling increases the possibility by six to seven percent. This same pattern is reflected in the effects on occupational expectations. The better they do in school and the longer they stay, other things equal, the higher the status of the occupation they expect to have in 1984; each additional year of schooling raises these expectations by 10 points.

These data suggest that early school leavers see the link between schooling and work. Those who have done well at school, relatively speaking, plan to get more schooling and expect to do well in the workforce. Those who have not done well at school, and who have left as soon as they could, do not intend to return and do not expect to do as well occupationally as a result. In short, the least capable and least schooled of the early leavers seem willing to accept a less than bright occupational future rather than return to school. One might wonder what it is about schools that leads to this kind of rejection of education. We offered some speculations earlier on modes of instruction and reward structures in schools, and work to be reported soon on the 'quality of school life' may illuminate this further.

Equality

Geographical location has its effects through school rurality. The more rural the school attended, other things equal, the less likely is the early leaver to participate in further education. We interpret this as one of the few effects of rural isolation that we have seen in these data. Most likely this is a matter of the degree of awareness that further education is available, given that the more rural the town the less likely that facilities for further education exist. If so, rural early leavers would benefit from some publicity about the further education available in the larger centres to which these leavers almost certainly go to obtain jobs.

The commitment to schooling demonstrated by the non-English-born ethnic group in staying longer at school, is seen again. Other things equal, and relative to Australian-born early leavers, they are more likely to have attempted further education and to plan on doing more. Their occupational expectations for 1984 do not however, differ from those of the Australian-born group.

Social background effects are limited to the pervasive effects of father's occupation and are positive, reflecting again the net advantage that accrues from the social and economic attainments of one's parents. The effects of sex mean that, other things equal, female early leavers are less likely to participate in further education. One might guess that some female early leavers see a limited future for themselves in the workforce and, hence, little point to further education.

Youth at Risk

We have taken a necessarily limited view of the future as seen by early school leavers but have argued that further education will figure prominantly in it as machines replace the unskilled and semi-skilled labour of persons. Apart from rural youth who may not be exposed to the idea and fact of further education, and female early leavers who may see it as irrelevant to their future status out of the workforce, those whose future is at most risk are, as before, the least schooled and the least skilled. Those who have failed to master the basic skills that schools teach and who have the least amount of schooling are also those least likely to participate in further education. Moreover, they seem to realize that there is a price to pay for this in the form of reduced occupational success, as reflected in their lower expectations, and presumably are willing to accept it. We see this as being consistent with an experience of school so negative that these individuals leave as soon as they are able without having learned the skills needed to function effectively, and are unwilling to return even though they realize that they will be penalized in the workplace as a result. We have offered some argument and evidence to explain this phenomenon and to suggest how it might be avoided. However, in addition to the preventative measures that might be taken in primary and secondary schools, some restorative approaches may be needed. Further education must be presented to youth as an experience different from that of traditional schooling and as one that provides them with skill capital that can be traded on the open market.

Phase Two

Phase one of the 'Study of School Leavers' was, in part, a feasibility study and was designed to collect skeletal information on the transition from school to work or further education. Because we believed that time was of the essence in reporting these data we adopted a simplified model, made some simplifying assumptions and undertook the analyses using moderately simple statistics appropriate for our purpose. The analyses reported here were designed to provide a summary overview of the main questions under investigation. In the coming year we will undertake two extensions of these analyses. First, we will investigate how much simplification we have introduced into these analyses with the assumptions we made. For example, we will relax the assumption that the effect of sex is additive and consider whether the transition is different for males and females. Second, we will elaborate on the basic information obtained with a second questionnaire to all respondents. Data collection for phase two is almost complete at this time.

Social Policy and Determinism

Throughout all of this report we have ignored discussion of the amount of variance in each outcome we have been able to explain. The statistics are reported in Tables 4.1, 4.3, 5.1c and 5.3 and these indicate that our model of youth in transition explains anywhere from 3 per cent to 24 per cent of the variance in educational and occupational attainments of 17-year-olds. In short, most of the observed differences between individuals remain unexplained and by any absolute standard we cannot account very well for these outcomes. However, relatively speaking we do quite well; for example, we explain about the same proportion of variance in schooling completed as do Broom et al., (1980:28), even though we restrict the range to that of schooling undertaken by early school leavers. The point of all this is that complex human behaviour may not be very predictable. In reviewing 20 years of educational research Glass comes to the following conclusion:

> the vast majority of the variance in educational effectiveness (is) unexplained in terms of the influences that we can currently measure and control...The conditions that make schooling effective are either in practice unknown, unmeasurable, too numerous or too labile to be controlled by persons at any significant distance from the nexus of learning, namely a pupil's brain and a tutor. (Glass, 1979:14)

Though this is probably an overstatement, by comparison we have done tolerably well. The point, of course, is that one should not expect to be able to explain large amounts of variance in these somewhat unpredictable systems. Nor should one expect to be able to make major changes by manipulating those policy variables we deal with currently. Nevertheless, changes brought about by social policy action are possible and should be made. What we should not do is to hold unrealistic expectations for the size of the effects. We quote Glass again on how one should deal with these unpredicable social systems:

> Such systems must be monitored diligently; the actions within them must remain versatile and flexible, and the services must be highly decentralized. Persons must command options instead of eternal truths. (Glass, 1979:14)

REFERENCES

Alwin, Duane F.
1976 'Socioeconomic background, colleges, and post-collegiate achievements'. Pp. 343-372 in William H. Sewell, Robert M. Hauser and David L. Featherman (eds.). Schooling and Achievement in American Society. N.Y.: Academic Press.

Alwin, Duane F. and Richard C. Tessler
1974 'Causal models, unobserved variables and experimental data'. American Journal of Sociology 80 (July):58-86.

Andrews, Frank M., James N. Morgan, John A. Sonquist and Laura Klem
1973 Multiple Classification Analysis. Ann Arber, MI: Institute for Survey Research.

Australia
1978 Review of Post-arrival Programs and Services for Migrants. Canberra: Australian Government Publishing Service.

Australian Bureau of Statistics
1979 The Labour Force: Educational Attainment, Australia, February 1979. Canberra: Australian Bureau of Statistics.

Australian Council for Educational Research
1979 Forty-Ninth Annual Report. Melbourne: The Australian Council for Educational Research.

Bachman, Jerald G., Robert L. Kahn, Martha T. Mednick, Terrence N. Davidson and Lloyd D. Johnston
1969 Youth in Transition. Vol. I. Ann Arbor, MI: Institute for Social Research.

Bachman, Jerald G.
1970 Youth in Transition. Vol.II. Ann Arbor, MI: Institute for Survey Research.

Bachman, Jerald G., S. Green and I. Wirtanen
1971 Youth in Transition. Vol. III. Ann Arbor, MI: Institute for Social Research.

Bachman, Jerald G., P.M. O'Malley and J. Johnston
1978 Youth in Transition, Vol. IV. Ann Arbor, MI: Institute for Social Research.

Bereiter, Carl
1969 'The future of individual differences'. Harvard Educational Review 39 (Spring): 310-318.

Bielby, William T. and Robert M. Hauser
1977 'Structural Equation Models'. Pp. 137-161 in Alex Inkeles (ed.) Annual Review of Sociology Vol 3. Palo Alto, Calif.: Annual Reviews Inc.

Blalock, Hubert M. Jr.
1964 Causal Inferences in Nonexperimental Research. Chapel Hill, N.C.: University of North Carolina Press.

1968 'The measurement problem: a gap between the languages of theory and research'. Pp.5-26 in Hubert M. Blalock Jr. and Ann B. Blaloch (eds.). Methodology in Social Research. N.Y.: McGraw-Hill.

1969 Theory Construction. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Blalock, Hubert M. Jr. and Ann B. Blalock (eds.)
1968 Methodology in Social Research. N.Y.: McGraw-Hill.

Bourke, S.F. and R. Lewis
1976 Australian Studies in School Performance. Vol.II. Literacy and Numeracy in Australian Schools: Item Report. Canberra: Australian Government Publishing Service.

Bourke, S.F. and J.P. Keeves
1977 Australian Studies in School Performance. Volume III. The Mastery of Literacy and Numeracy. Canberra: Australian Government Publishing Service.

Bowles, Samuel, and Herbert Gintis
1973 'IQ in the U.S. class structure.' Social Policy (November/December and January/February): 65-96.

Broom, Leonard, F. Lancaster Jones, and Jerzy Zubrycki
1965 'An occupational classification of the Australian workforce'. Australian and New Zealand Journal of Sociology, 1 (October): Supplement.

Broom, Leonard and F. Lancaster Jones
1976 Opportunity and Attainment in Australia. Canberra: ANU Press.

Broom, Leonard, P. Duncan-Jones, F. Lancaster Jones, and Patrick McDonnell
1977 Investigating Social Mobility. Canberra: ANU Press.

Broom, Leonard, F. Lancaster Jones, Patrick McDonnell and Trevor Williams
1980 The Inheritance of Inequality. London: Routledge and Kegan Paul.

Carnoy, M.
1974 Education as Cultural Imperialism. New York: David McKay and Co.

Clarridge, B., Sheehy, L. and Hauser, T.
1976 Tracing Members of a Panel: A 17 Year Follow Up. University of Wisconsin, Madison: Center for Demography and Ecology, Working Paper 76-23.

Coleman, James S.
1972 'Policy Research in the Social Sciences. Morristown, N.J.: General Learning Press.

Connell, William F., R.E. Stroobant, K.E. Sinclair and K.W. Rogers
1975 12 to 20: Studies of City Youth. Sydney: Hicks Smith.

Crites, J.O.
1973 Career Maturity Inventory Handbooks. Monterey, CA: CTB/McGraw-Hill.

Davis, James A.
1966 'The campus as a frog-pond: an application of the theory of relative deprivation to career decisions of college men'. American Journal of Sociology, 72 (July):17-31.

Dubin, Robert
1969 Theory Building. N.Y.: The Free Press

Duncan, Otis Dudley
1975 Introduction to Structural Equation Models. N.Y.: Academic Press.

Ekland, Bruce K.
1968 'Retrieving mobile cases in longitudinal surveys'. Public Opinion Quarterly, 32 (Spring): 51-64.

Falk, William W. and Thomas K. Pinhey
1978 'Making sense of the concept rural and doing rural sociology: an interpretive perspective'. Rural Sociology 43 (Winter):547-558.

Farkas, George
1974 'Specification, residuals and contextual effects'. Sociological Methods and Research (February):333-364.

Fisher, R.A.
1946 Statistical Methods for Research Workers. Edinburgh: Oliver and Boyd.

Gilmour, Peter and Russell Lansbury
1978 Ticket to Nowhere. Ringwood, Vic.: Penguin Books.

Glass, Gene V.
1979 'Policy for the unpredictable (uncertainty research and policy)! Educational Researcher 8 (October):12-14.

Goldberger, Arthur S.
1964 Econometric Theory. N.Y.: Wiley and Sons.

1973 'Structural equation models: an overview'. Pp.1-18 in Arthur S. Goldberger and Otis Dudley Duncan (eds.), Structural Equation Models in the Social Sciences. N.Y.: Seminar Press.

Goldthorpe, J.H. and K. Hope
1972 'Occupational grading and occupational prestige'. Pp.19-79 in K. Hope (ed.). The Analysis of Social Mobility: Methods and Approaches. Oxford: Clarendon Press.

Harris, Max
1979 'Unemployment and unemployable youth'. The Australian. October 20-21.

Hauser, Robert M.
1974 'Contextual analysis revisited'. Sociological Methods and Research. (February): 365-375.

Heberlein, Thomas A. and Robert Baumgartner
1978 'Factors affecting response rates to mail questionnaires'. American Sociological Review 43 (August): 447-462.

Heise, David R.
1969 'Problems in path analysis and causal inference'. Pp.38-73 in Edgar F. Borgatta (ed.) Sociological Methodology 1969. San Francisco: Jossey-Bass.

Jencks, Christopher, Marshall Smith, Henry Acland, Mary Jo Bane,
David Cohen, Herbert Gintis, Barbara Heynes and Stephan Michelson
1972 Inequality: A Reassessment of the Effect of Family and Schooling in America. N.Y.: Basic Books.

Jensen, Arthur R.
1969 'How much can we boost IQ and scholastic achievement?'. Harvard Educational Review 39 (Winter): 1-123.

1970 'Another look at culture-fair testing'. Pp. 53-101 in J. Hellmuth (ed.), Disadvantaged Child. Vol. 3, Compensatory Education: A National Debate. N.Y.: Brunner-Mazel.

Jones, F. Lancaster, Patrick McDonnell and Trevor Williams
1977 'Occupational achievement and economic rewards: some social determinants', in K.A. Tucker (ed.), The Economics of the Australian Service Sector. London: Croom Helm.

Katz, Michael, B.
1971 Class, Bureaucracy, and Schools. New York: Praeger.

Keeves, J.P.
1968 Variation in Mathematics Education in Australia. Melbourne: ACER.

1972 Educational Environment and Student Achievement. Melbourne. ACER.

Keeves, J.P. and S.F. Bourke
1976 Australian Studies in School Performance. Volume I. Literacy and Numeracy in Australian Schools: A First Report. Canberra: Australian Government Printing Service.

Kerlinger, Fred N. and Elazar J. Pedhazur
1973 Multiple Regression in Behavioral Research. N.Y.: Holt, Rinehart and Winston.

Kohn, Melvin and Carmi Schooler
1969 'Class, occupation and orientation'. American Sociological Review, 34 (October): 659-678.

Labovitz, Sanford
1970 'The assignment of numbers to rank order categories'. American Sociological Review 35 (June): 515-524.

1967 'Some observations on measurement and statistics'. Social Forcess 46 (December): 151-160.

Lansing, John B. and James N. Morgan
1971 Economic Survey Methods. Ann Arbor, MI.: Institute for Social Research.

Lurie, Morris
1980 'Lilacs and bright children'. The Age. Monday, March 17, p.20.

Marjoribanks, Kevin
1979 Families and Their Learning Environments. London: Routledge and Kegan Paul.

Martin, Jean I.
1978 The Migrant Presence. Sydney: George Allen and Unwin.

Munck, Ingrid M.E.
1979 Model Building in Comparative Education. Stockholm: Almqvist and Wiksell.

O'Brien, Robert M.
1979 'The Use of Pearson's r with ordinal data'. American Sociological Review 44 (October): 851-857.

Poole, Millicent
1978 'Identifying early school leaving'. Australian Journal of Education, 22 (March): 13-24.

Radford, W. C.
1950 Curriculum Survey: Summary Report to the Directors of Education. Melbourne: ACER (Duplicated).

Radford, W.C. and R.E. Wilkes
1975 School Leavers in Australia 1971-1972. Melbourne: Australian Council for Educational Research.

Rehberg, Richard A. and Evelyn Rosenthal.
1978 Class and Merit in the American High School: An Assessment of Revisionist and Meritocratic Arguments. N.Y.: Longmans.

Rosenshine, Barak V.
1979 'Content, time and direct instruction'. Pp.28-56 in Penelope L. Peterson and Herbert J. Walberg (eds.). Research on Teaching: Concepts, Findings and Implications. Berkeley, CA: McCutchen Publishing Co.

Rosier, Malcolm, J.
1978 Early School Leavers in Australia. IEA Monograph Series No.7. Stockholm: Almqvist and Wiksell.

In Press Changes in Secondary School Mathematics in Australia, 1964-1978. Melbourne: ACER.

Ross, K.N.
1978 'Sample design for educational research.' Evaluation in Education: International Progress. 2:105-195.

Schnore, Leo F.
1966 'The rural-urban variable: an urbanite's perspective'. Rural Sociology 31 (June): 131-148.

Schools Commission
1975 Report for the Triennium 1976-1978. Canberra: Australian Government Printing Service.

Sewell, William H., and Robert M. Hauser
1975 Education, Occupation, and Earnings: Achievement in Early Career. New York: Academic Press.

Sexton, Patricia C.
1961 Education and Income. New York: Viking Press.

Spaeth, Joe
1977 'Differences in the occupational achievement process between male and female college graduates'. Sociology of Education 50 (July): 206-217.

Specht, David A. and Richard D. Warren
1976 'Comparing causal models'. Pp.46-82 in David R. Heise (ed.) Sociological Methodology 1976. San Francisco: Jossey-Bass.

Spenner, Kenneth I. and David L. Featherman
1978 'Achievement Ambitions'. Pp. 373-420 in Ralph H. Turner (ed.) Annual Review of Sociology, Vol. 4. Palo Alto, CA: Annual Reviews, Inc.

Sturman, Andrew
1979 'From school to work: a review of major research in Australia'. Australian Education Review No. 13. Melbourne, Vic: ACER

Suits, Daniel
1957 'Use of dummy variables in regression equations'. Journal of the American Statistical Association 52: 548-551.

Super, D.E.
1957 The Psychology of Careers. N.Y.: Harper.

Theodorson, George A. and Achilles G. Theodorson
1970 A Modern Dictionary of Sociology. London: Methuen and Co. Ltd.

Thorndike, R.L.
1973 Reading Comprehension Education in Fifteen Countries. Stockholm: Almqvist and Wiksell.

van Es, J.C., and J.E. Brown Jr.
1974 'The rural-urban variable once more: some individual level observations'. Rural Sociology. 39 (February): 373-391.

Walker, David A.
1976 The IEA Six Subject Survey: An Empirical Study of Education in Twenty-One Countries. Stockholm: Almquist and Wiksell.

Williams Trevor, Margaret Batten, Sue Girling-Butcher and Jeff Clancy
1980 'The Quality of School Life'. Paper presented at the 50th Congress of The Australian Association for the Advancement of Science.

Willits, Fern K. and Robert C. Bealer
1967 'An evaluation of a composite definition of rurality'. Rural Sociology 32 (June): 165-177.

Windschuttle, Keith
1979 Unemployment. Ringwood. Vic: Penguin Books.

Wright, Erik Olin
1977 'Marxist class categories and income inequality'. American Sociological Review. 42 (February): 32-55.

Wright, Sewell
1934 'The method of path coefficients'. Annals of Mathematical Statistics. 5:161-215.

1960 'Path coefficients and path regressions: alternative or complementary concepts?'. Biometrics 16:189-202.

Zeller, Richard A. and Zachary H. Levine
1974 'The effects of violating the normality assumption underlying r'. Sociological Methods and Research 2 (May): 511-519.

APPENDIX A

PHASE ONE QUESTIONNAIRES

A	Questionnaire to Students
B	Questionnaire to Early School Leavers

Questionnaire to Students

Australian
Council for
Educational
Research

SCHOOL AND WORK

We are asking 17-year-olds all over Australia and in all walks of life about their present occupation and their plans for the future. Some of the sample are working, some are unemployed, and others are still at school. Your answers are important because they will help to provide a comprehensive picture of the study and work plans of the student group.

EVERY ANSWER IS CONFIDENTIAL. Your name is never used for anything except to post out a letter to you. Tick the answers that best describe you or fill in the blank spaces. Answer as many questions as you can. If some of them are too hard, ask someone to help you.

Thank you very much. We appreciate your help.

---

1 WERE YOU A STUDENT DURING 1978?

Yes, I was a full-time student ☐
Yes, I was a part-time student ☐
No, I was not a student ☐ → PLEASE SKIP TO QUESTION 5

2 WHAT TYPE OF EDUCATIONAL INSTITUTION WERE YOU ATTENDING?

Secondary school ☐ → What year, form, or grade were you in? ......
Teachers college ☐
University ☐
College of advanced education ☐
Technical college ☐
Business college ☐
Other ☐

3 WHAT WERE YOUR REASONS FOR CONTINUING WITH EDUCATION
(You can tick more than one box)

To gain higher qualifications ☐
To get a better job ☐
Because I like it ☐
Because I couldn't get a job ☐
Because there was nothing else to do ☐
Other (please describe) ☐ ....

4 WHAT DO YOU PLAN TO DO NEXT YEAR?
(You can tick more than one box)

Further study ☐
Get a job ☐
Haven't made up my mind yet ☐

G Published by The Australian Council for Educational Research Limited
Frederick St Hawthorn Victoria 3122

Please turn over

5 DO YOU HAVE A JOB NOW?

Yes, I have a full-time job ☐

Yes, I have one or more part-time jobs ☐

No, I do not have a job ☐

---

6 WHAT KIND OF A JOB DO YOU HOPE TO HAVE IN FIVE YEARS TIME?

....

---

7 WHAT IS THE PRESENT OR LAST MAIN OCCUPATION OF YOUR FATHER OR GUARDIAN?
(Name the occupation and describe what he does)

Occupation: ....

What he does ....

---

8 WHAT IS THE PRESENT OR LAST MAIN OCCUPATION OF YOUR MOTHER?
(Name the occupation and describe what she does)

Occupation: ....

What she does ....

---

9 HOW MUCH EDUCATION HAVE YOUR FATHER AND MOTHER HAD?

	Father	**Mother**
Primary school only	☐	☐
Some secondary school	☐	☐
Finished secondary school	☐	☐
Tertiary (university, college degree or diploma)	☐	☐
Further training (not degree or diploma)	☐	☐
Don't know	☐	☐

Please return in the envelope provided.

Thank you for your time.

Questionnaire to Early School Leavers

Australian
Council for
Educational
Research

SCHOOL AND WORK

We are asking young people in all walks of life from all over Australia about their jobs and the problems they have in finding work. Your answers are important because they will help to provide an accurate picture of the problems young people face when they leave school.

EVERY ANSWER IS CONFIDENTIAL. Your name is never used for anything except to post out a letter to you. Tick the answers that best describe you or fill in the blank spaces. Answer as many questions as you can. If some of them are too hard, ask someone to help you.

Please return to:
Australian Council for Educational Research,
Frederick Street, Hawthorn,
Victoria, 3122.

Thank you very much. We appreciate your help.

Please turn over

1 **HAVE YOU BEEN A FULL-TIME STUDENT AT A SECONDARY SCHOOL FOR MOST OF 1978?**

No ☐ *Please go on to question 2*

Yes ☐ *Please skip to question 10*

2 **WHEN DID YOU FINISH FULL-TIME STUDIES AT A SECONDARY SCHOOL?**

Which month? .... **Which year?** ....

3 **WHAT YEAR, FORM, OR GRADE WERE YOU IN WHEN YOU LEFT SCHOOL?** ....

4 **HAVE YOU HAD ANY JOBS SINCE LEAVING SCHOOL?**

Yes ☐ *Please go on to question 5*

No ☐ *Please skip to question 9*

5 **WHEN DID YOU START YOUR FIRST JOB AFTER LEAVING SCHOOL?**

Which month?.......................... **Which year?** ....

WAS YOUR FIRST JOB AFTER LEAVING SCHOOL FULL-TIME OR PART-TIME?

Full-time ☐ **Part-time** ☐

WAS IT THE KIND OF JOB YOU REALLY WANTED?

Yes	**Almost**	**Not really**	**No**
☐	☐	☐	☐

6 **THINK OF ALL THE JOBS YOU HAVE HAD SINCE YOU LEFT SCHOOL**

How many full-time jobs have you had? .... **How many part-time jobs have you had?** .....

7 **HAVE YOU EVER BEEN OUT OF WORK SINCE YOU LEFT SCHOOL?**

Yes ☐ ← **and if I add up all the time I have spent out of work it comes to:** .... **years** .... **months**

No ☐

Please go on to question 8

8 DO YOU HAVE A JOB NOW? Yes ☐ No ☐

Yes ↓	No ↓
I have a full-time job ☐	How long since you last had a job?
I have one or more part-time jobs ☐	..... years ..... months
What is your job? (Describe your main job)	What was your last main job?
....	....
What do you do in your job?	What did you do in your job?
....	....
What kind of a job do you hope to have in five years time?	What kind of job do you hope to have in five years time?
....	....

9 HAVE YOU DONE ANY FURTHER STUDY SINCE LEAVING SECONDARY SCHOOL?

Yes, I started a course but gave it up ☐
Yes, I have finished a course ☐
Yes, I am still doing a course ☐
No, but I plan to start a course next year ☐

→ **What type of course was it?**

Apprenticeship ☐
Other certificate course ☐
Diploma course ☐
Degree course ☐
Other (please describe) ☐
....

No, and I have no plans for further study ☐

10 WHAT IS THE PRESENT OR LAST MAIN OCCUPATION OF YOUR FATHER OR GUARDIAN?
(Name the occupation and describe what he does)

Occupation: ....
What he does ....

11 WHAT IS THE PRESENT OR LAST MAIN OCCUPATION OF YOUR MOTHER?
(Name the occupation and describe what she does)

Occupation: ....
What she does ....

12 HOW MUCH EDUCATION HAVE YOUR FATHER AND MOTHER HAD?

	Father	Mother
Primary school only	☐	☐
Some secondary school	☐	☐
Finished secondary school	☐	☐
Tertiary (university, college degree or diploma)	☐	☐
Further training (not degree or diploma)	☐	☐
Don't know	☐	☐

Please turn over

13 *[THIS QUESTION IS TO BE ANSWERED BY FULL-TIME STUDENTS ONLY]*

ARE YOU ATTENDING SECONDARY SCHOOL?

Yes, I am attending a secondary technical school, high school or college ☐

No, I am attending a tertiary institution ☐

(e.g. university, technical college, teachers college, college of advanced education)

Please return in the envelope provided. Thank you for your time.

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Frederick Street Hawthorn Victoria 3122

APPENDIX B

COMPUTER PROGRAM TO PRINT NAME AND ADDRESS LABELS FROM LINK FILE

151

1 LISTING OF THE LABELS PROGRAM

```
c ##########################################################################
c
c      LABELS PROGRAM   v2.5  aug 79
c
c   written by J. Clancy and C. Lokan
c   modified by G. Smith
c
c    i/o requirements
c      input file - ftnl.dat (card image file of id's and addresses)
c      scratch files - ftn10.dat,ftn17.dat
c      output devices - line printer,Qume
c
c  NB maximum length of address is 70 characters
c
c
c    input format is:
c
c        col no
c             1       10...
c             XXXXXXX   J. A. ADAMS,51 SMITH ST.,MELBOURNE,3000
c  where
c       XXXXXXX is the identification number (up to 10 characters) and
c       the lines of the address are seperated by commas. The program
c       interprets these commas as carriage returns and line feeds for
c       the labels
c
c       This example would be output as
c
c          J. A. Adams
c          51 Smith St.
c          Melbourne
c          3000
c
c       and the id and name would appear on the listing
c
c       Answers to all queries from the computer are Yes or No unless
c       indicated otherwise
c ###########################################################################
c
      implicit integer (a-z)
      data idin/10*1h /
      LOGICAL*1 adres,hont,blank
      common/head/nhch,hont(35)
      common /labl/ncl,labth
      dimension hdgl(10),hdg2(40)
      common lad,adres(70),nid,idin(10),recordno,lines,skipped,outmodes
      data skipped,datacards,studs,nstuds/4*0/
      data adrcards,studadrs,nstudadrs/3*0/
      data blank/1h /
      data lad/70/
```

```
c   length of address =70 characters
      data mid/10/
      data ych/1hY/
c
c
c     First find out what output is needed
c
c
      call print(' How many columns before the  name on the cards?')
c   maximum length of the id is 10 characters
      read(5,872)nid
872   format(i2)
      if(nid .gt. mid) stop 'Too many'
      call print(' Do you want upper and lower case output?')
      read(5,806)ulq
      in2=1
      if(ulq .eq. ych)in2=10
      type 800
  800 format (' do you want listing only, labels only, or both ?')
   10 type 801
  801 format (' 0 - listing, 1 - labels, 2 - both  : '$)
      accept 802, outmodes
  802 format (i1)
      if (outmodes.lt.0.or.outmodes.gt.2) go to 10
      type 803
803   format(' input acronym for study and run no. (less than 20 ch)')
      accept 804,hdg1
804   format(10a2)
      type 805
805   format(' input heading for the listings (40 ch max)')
      accept 806,hdg2
806   format(40a1)
c
c
c     Set up appropriate I/O devices.
c
c
      if(outmodes.eq.0)go to 25
      call print (' How many copies of each label (<10) ?')
      read(5,802) ncl
      call print (' Are you using usual width (1.5") labels ?')
c   alternative is the shorter 1" labels
      read(5,806)labth
      do 13 i=1,35
13    hont(i)=1h
      call print(' Do you want a common 1st line on labels?')
      read(5,806)ans
      if(ans .ne. ych)goto 25
15    call print(' What is it? (<36 characters)')
      read(5,806)hont
      write(7,876)hont
876   format(' Is ',1h',35a1,1h',' what you want?')
      read(5,806)ans
      if(ans.ne.ych)goto 15
      nhch=itrim(35,hont)
c  trim off trailing blanks for slow printer.
25    if(outmodes-1)30,29,28
28    call assign(2,'LP: ',0)
      call assign(6,'KB: ',0,,'CC')
      call label
      go to 40
29    call assign (2,'NL: ',0)
      call assign (6,'KB: ',0,,'CC')
      call label
      go to 40
   30 call assign (2,'LP: ',0)
      call assign (6,'NL: ',0)
40    if(in2 .eq. 1)goto 301
c  skip upper to lower case translation.
c
c
c
c     read address cards to build file
c
c
  200 read (1,914,end=300) (idin(i),i=1,nid),(adres(i),i=1,lad)
      adrcards=adrcards+1
      call uptlow (lad,adres)          ! convert to lower case
      write(10,914)(idin(i1),i1=1,nid),adres
      go to 200
c
c
c     Print out labels/listings .
c
c
300   rewind 10
301   recordno = 0
      write (6,905)hdg1                   ! label hdg
      if(labth .eq. 1hY)write(6,975)
975   format(//)
      set = 1
      page = 1
  310 lines = 10
      write (2,906) hdg2,page          ! page hdg
      write (2,907)                    ! column hdgs
      page = page + 1
  320 read (in2,902,end=500)(idin(i1),i1=1,nid),adres
      recordno=recordno+1
      call buffer                      ! routine handles output
      if (lines.ge.55) go to 310
      go to 320
c
c
c
c
c
c
500   continue
c
c
c
c
c     Close and delete files.
c
c
      if (studadrs.ne.0) close (unit=in2)
600   stop
c
c
c
902   format(80a1)
  903 format (' error in school code for student ',i4,i3)
  905 format (1x,25('*')/' *',23x,'*'/' *    ',10a2,'*'/
     1 ' *',23x,'*'/1x,25('*')/)
906   format('1',130('*')/1x,'***    ',40a1,t120,'Page ',i4,'  ***'/
      11x,130('*')//)
  907 format (5x,'Record',11x,'ID No.',20x,'Name'/3x,100('-'))
  908 format (1x,25('*')/' *',23x,'*'/' *   nonstudent labels   *'/
     1 ' *',23x,'*'/1x,25('*')////)
  909 format ('1',' State number  ',i2//)
  910 format (//' Number of labels printed : ',i5//)
  911 format (//10x,' actual n',10x,' School ID ',10x,' N Cases')
  912 format (/10x,i9,10x,i10,11x,i8)
  913 format (//10x,' Total no of cases is',i5)
914   format(10a1,70a1)
c
c
      end


      subroutine buffer
c
c
c     routine to break up address into three lines and print it
c
c
      implicit integer (a-z)
      logical*1 adres,comma,hont
      common/labl/ ncl,labth
      common/head/nhch,hont(35)
      common lad,adres(70),nid,idin(10),recordno,lines,skipped,outmodes
      dimension buff(35,4)
      dimension l(4)
      logical*1 buff
      data comma,blank/',',' '/
      mchl=35
c max nr characters per line
      ml=4
c    maximum no of lines on the label
      do 5 m=1,mchl
      do 5 n=1,ml
5     buff(m,n)=blank
c
c     Get first line.
c
      k=0
   10 k=k+1
      if (adres(k).eq.comma) go to 20
      buff(k,1)=adres(k)
      if (k.lt.mchl) go to 10
      write(17,990) idin  ! address error
      write(2,991)recordno,idin
c  produce id number in list, but no name, and no label.
      skipped=skipped+1
      return
   20 write(2,991) recordno,idin,(buff(kk,1),kk=1,mchl)
      lines=lines+2
      l(1)=k-1
c  print only to comma.
      if (outmodes.eq.0) return
c
c     Get second line
c
      savek=k
   30 k=k+1
      if (adres(k).eq.comma) go to 40
      buff(k-savek,2)=adres(k)
      if (k-savek.lt.mchl) go to 30
      l(2)=itrim(mchl,buff(1,2))
      write(17,999) (idin(il),il=1,nid)
999   format(' Two line address, id ',10a1)
c   possible error in the address format
      lc=2
      goto 900
40    l(2)=k-savek-1
c
c     Get third line
c
      savek=k
130   k=k+1
```

```
      if(k .gt. lad)goto 135
      if(adres(k) .eq. comma)goto 140
      buff(k-savek,3)=adres(k)
      if(k-savek.lt.mchl)goto 130
135   l(3)=itrim(mchl,buff(1,3))
      lc=3
      goto 900
140   l(3)=k-savek-1
c
c     last line if 4.
      doend=lad-k
      if (doend.gt.mchl) doend=mchl
      do 50 i=1,doend
   50 buff(i,4)=adres(k+i)
      l(4)=itrim(mchl,buff(1,4))
      lc=4
900   lskp=8-lc
      if(labth .ne. 1hY) lskp=lskp-3
c   correct for 6 line sticky label.
      do 925 k=1,ncl
      write(6,992)(hont(ii),ii=1,nhch)
      do 910 i=1,lc
910   write(6,992)(buff(j,i),j=1,l(i))
      do 915 i=1,lskp
915   write(6,993)
925   continue
      return
c
c
  990 format (/10x,' address error, student ',10a1)
  991 format(5x,i6,10x,10a1,3x,35a1,' I',2(14x,'I')/1x,100('-'))
  992 format (1x,41a1) !header line.
c   41because it must exceed the array length to avoid ) as / .
  993 format ()
c
c
      end


      subroutine label
      common/labl/ncl,labth
      data ych/'Y'/
    2 write(6,11)
   11 format('***  1st line testing          ***'//10('+',50x/),///)
c  we need all that to empty the print buffer
      if(labth .eq. 1hY)write(6,15)
15    format(///)
      write(7,12)
   12 format(5x,' HOW''S THAT ??')
      read(5,13)ch
1
```

```
   13 format(1a1)
      if (ch.ne.ych) go to 2
      if(labth .ne. 1hY) goto 20
      write(6,14)
   14 format(' ***',t32,'***'/4(' *',t35,'*'/)
      $  ,' ***',t32,'***'/,10('+',50x/)//)
      goto 25
20    write(6,17)
   17 format(' ***',t32,'***'/(' *',t35,'*'/)
      $  ,' ***',t32,'***'/,10('+',50x/)//)
c  6 line sticky label
25    write(7,12)
      read(5,13)ch
      if (ch.ne.ych) go to 2
      return
      end


      subroutine uptlow (nch,an)
      LOGICAL*1 an
      integer ua,uz,bl,cm,mnch,m2
      dimension an(nch)
      data ua,uz,bl,cm,m1,m2/o101,o132,o40,o54,o40,o0/
      ist=1
c     ist=1..leave, -1....upper to lower.
      do 10 i=1,nch
    5 if (an(i) .gt. uz) go to 9
      if (an(i) .lt. ua) go to 9
      if (ist   .eq. -1) go to 7
c     upper a to z, 1st since nonalpha.
      ist=-1
      go to 10
    7 an(i)=an(i) .or.m1
      go to 10
    9 ist=1
   10 continue
d     write(7,700)(an(i),i=1,nch)
700   format(1x,100a1)
      return
      end

      function itrim(length,array)
c  returns with value of subscript for last nonblank
c     character in the logical*1 array of length.
      logical*1 blank,array
      dimension array(length)
      data blank/1h /
      do 10 i=1,length
      itrim=length-i+1
      if(array(itrim) .ne. blank) goto 50
1         LISTING OF THE LABELS PROGRAM
10    continue
      itrim=1
50    return
      end
      end

======================  355 LINES ================
```

APPENDIX C

COMPARISONS OF CORRELATIONS AND PARTIAL REGRESSION COEFFICIENTS IN ORIGINAL AND RETAINED SAMPLES

In this appendix we address the question of whether sample attrition has affected relationships within the data. We are reasonably certain that non-response to our follow-up survey has been essentially random; however, since our analyses are based on relational statistics - correlations and partial regression coefficients - we need to examine the effect of sample attrition on these. To do this we compare correlation matrices across the two samples and estimate a simple model containing three equations in each case. The three equations regress Word Knowledge, Literacy and Numeracy separately on sex, family size, ethnicity, school, and location (metropolitan/non-metropolitan - see Bourke and Keeves, 1977:241). Thus, we estimate three equations twice, with each of the educational outcome variables considered in terms of the predictors for each of the two samples.

Pearson product moment correlation coefficients for the two samples are given in Table C.1. In the upper right triangle of the table are the correlation coefficients for the two samples with the coefficients for the retained sample in parentheses. For example, the correlation between family size and school location is 0.158 for the original sample and 0.146 for the retained sample. In the bottom left hand triangle are the absolute differences between the coefficients; for the example just cited this is 0.012. We note that direction of the coefficients do not vary much between the original and retained samples and that the differences between the coefficients are slight.

The six regression equations are summarized in Table C.2. Each column represents an equation using the sample named. Coefficients which do not reach significance are marked with an asterisk. We note that, first, the direction of the coefficients does not vary between the two groups and second, that the magnitude of the coefficients is similar in both groups. In short, the samples are remarkedly similar.

On the basis of these analyses we argue that sample biases do not constitute a problem. Although there are slight differences between the two samples these would not appear to seriously distort our generalizations to the total age cohort under examination.

Table C.1 Comparison of the Correlation Coefficients for the Original and Retained Samples (unweighted data)

	Sex	Family Size	English Born	Non-English Born	School Location	Catholic	Independent	Word Knowledge	Mastery of Literacy	Mastery of Numeracy
Sex		-.013[a] (-.023)[b]	-.024 (-.024)	.002 (.002)	-.018 (-.026)	-.024 (-.017)	.029 (.034)	.010 (.014)	.023 (.027)	-.015 (-.009)
Family Size	.010[c] .010		-.060 (-.064)	-.056 (-.058)	.146 (.158)	.111 (.091)	-.096 (-.106)	-.118 (-.150)	-.138 (-.170)	-.121 (-.141)
English-Born	.000	.004		-.160 (-.160)	-.116 (-.116)	-.067 (-.067)	.001 (.002)	.045 (.045)	.010 (.010)	.016 (.016)
Non-English-Born	.000	.002	.000		-.142 (-.142)	.050 (.050)	-.040 (-.040)	-.078 (-.078)	-.078 (-.078)	-.056 (-.056)
1975 School Location	.008	.012	.000	.000		-.092 (-.095)	-.113 (-.109)	-.097 (-.109)	-.057 (-.064)	-.069 (-.068)
1975 School Type:										
Catholic	.007	.020	.000	.000	.003		-.119 (-.109)	.114 (.122)	.079 (.082)	.042 (.057)
Independent	.005	.010	.001	.000	.004	.010		.169 (.162)	.076 (.083)	.095 (.090)
Word Knowledge	.004	.032	.000	.000	.012	.008	.007		.456 (.481)	.424 (.445)
Mastery of Literacy	.004	.032	.000	.000	.007	.003	.007	.025		.442 (.458)
Mastery of Numeracy	.006	.020	.000	.000	.001	.015	.005	.021	.016	

[a] Correlation coefficient based on retained sample (N=4919)

[b] Correlation coefficient based on original sample (N=6247)

[c] Absolute difference between correlation coefficients

Table C.2 Comparisons of the Partial Regression Coefficients for Simple Model Estimated in the Original and Retained Samples (unweighted data)

Independent Variables	Word Knowledge		Mastery of Literacy		Mastery of Numeracy	
	Original Sample	Retained Sample	Original Sample	Retained Sample	Original Sample	Retained Sample
Sex	0.34[a]	0.11[a]	0.03	0.02[a]	-0.03	-0.02[a]
Family Size	-0.45	-0.48	-0.03	-0.03	-0.02	-0.03
English-Born	0.64[a]	0.66[a]	-0.03[a]	-0.01[a]	-0.01[a]	-0.01[a]
Non-English Born	-2.65	-2.10	-0.14	-0.12	-0.10	-0.08
Catholic	3.76	3.13	0.14	0.13	0.07	0.08
Independent	5.43	5.04	0.15	0.11	0.15	0.13
School Location	0.16[a]	-0.96	-0.02[a]	-0.03	-0.02[a]	-0.04

[a] not statistically significant

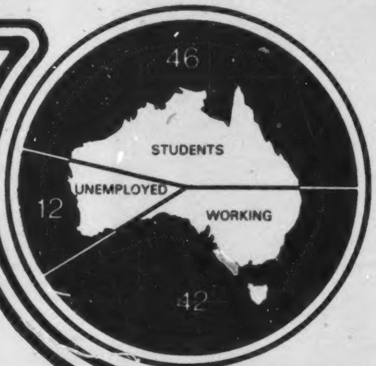
APPENDIX D

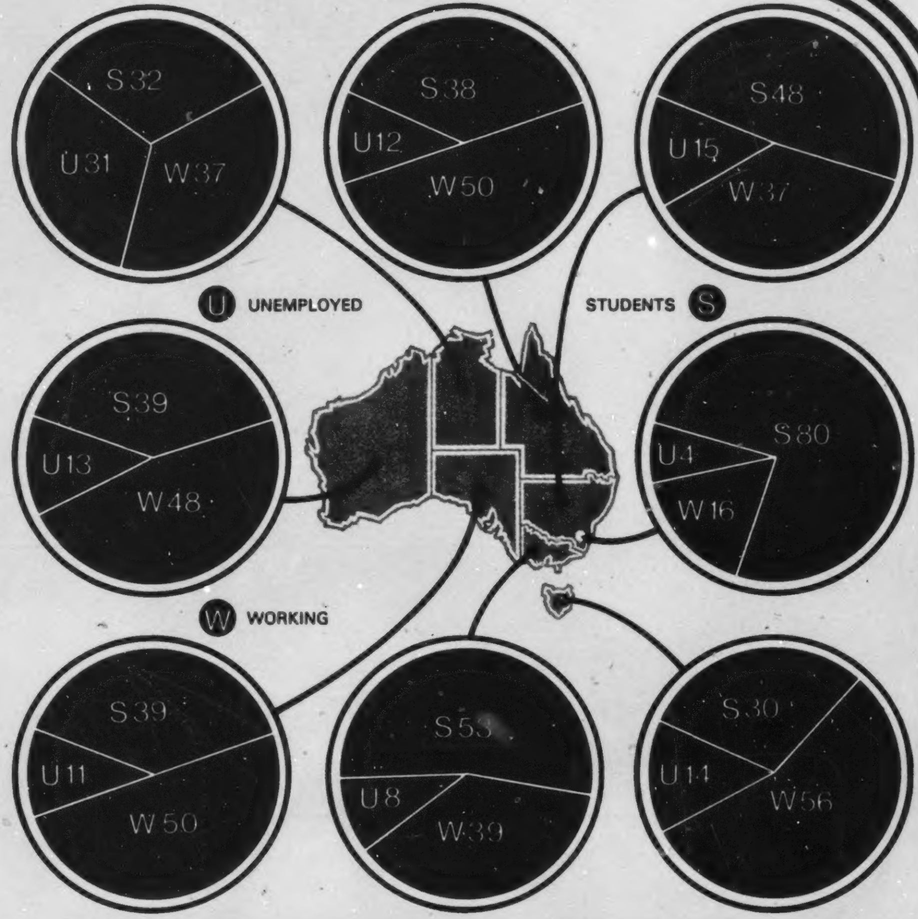
REPORT TO RESPONDENTS

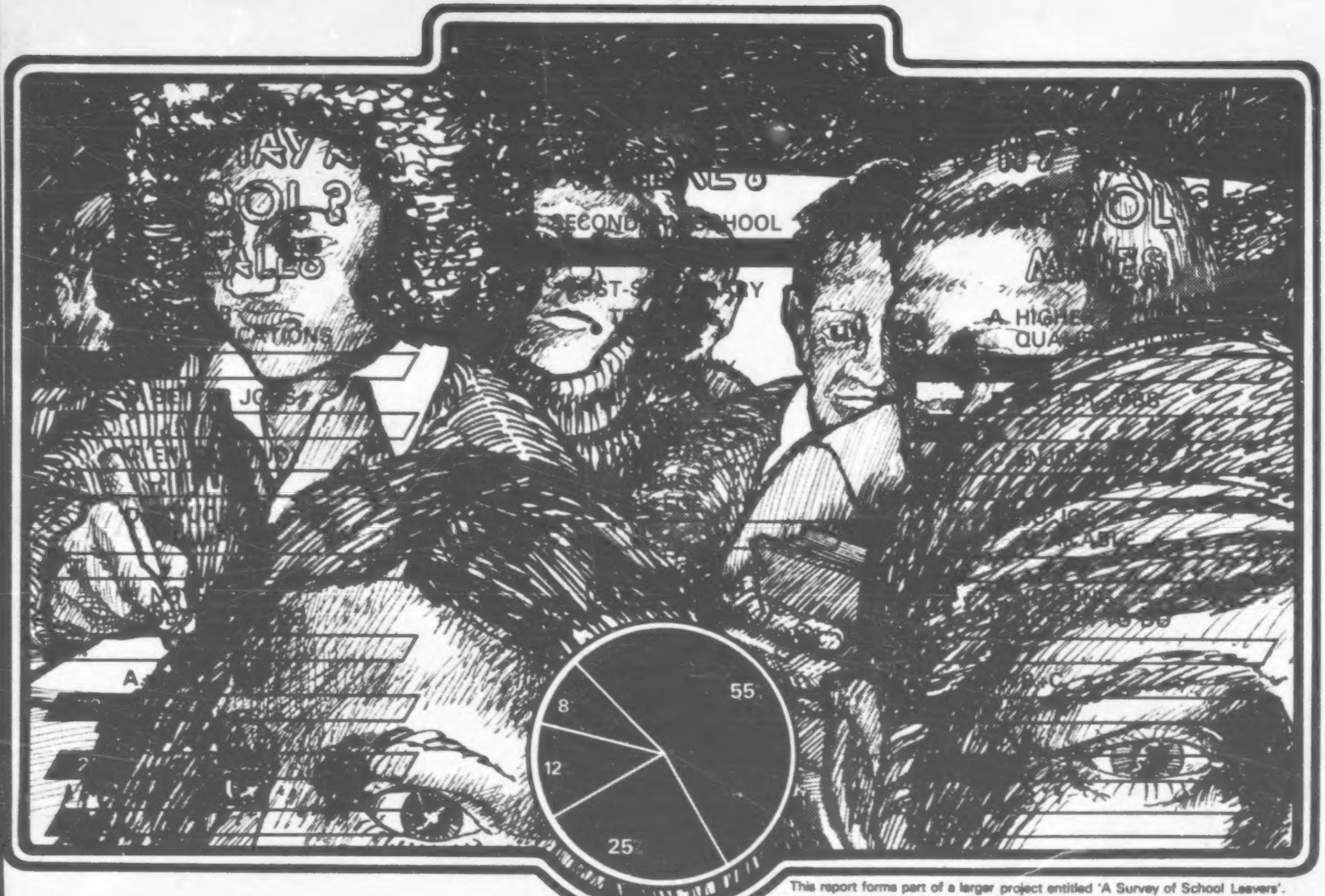
Australian
Council for
Educational
Research

BETWEEN SCHOOL & WORK

Earlier this year some 5,000 Australians, 17 and 18 years old, told us a little about their experiences at school, at work and inbetween. We would like to say 'thank you', and we hope this booklet is a way of doing so. Your answers helped us make this report. We hope it has as much interest for you as it has for us.

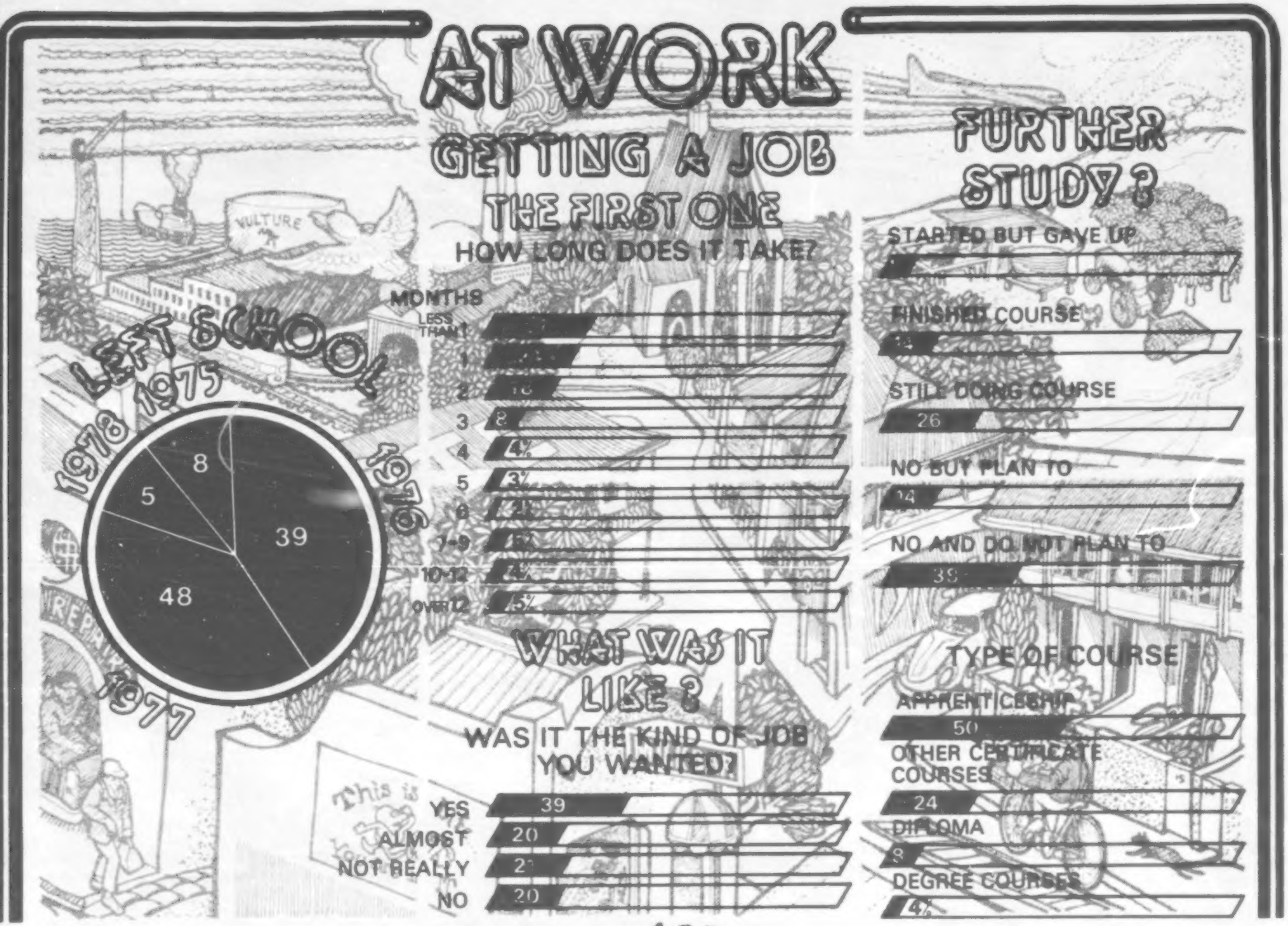





SECONDARY SCHOOL
POST-S RY
A HIGHE
QUA
55
8
12
25

This report forms part of a larger project entitled 'A Survey of School Leavers'.
The project is sponsored jointly by the
Education Research and Development Committee, and the A.C.E.R.

AT WORK



GETTING A JOB

THE FIRST ONE

HOW LONG DOES IT TAKE?

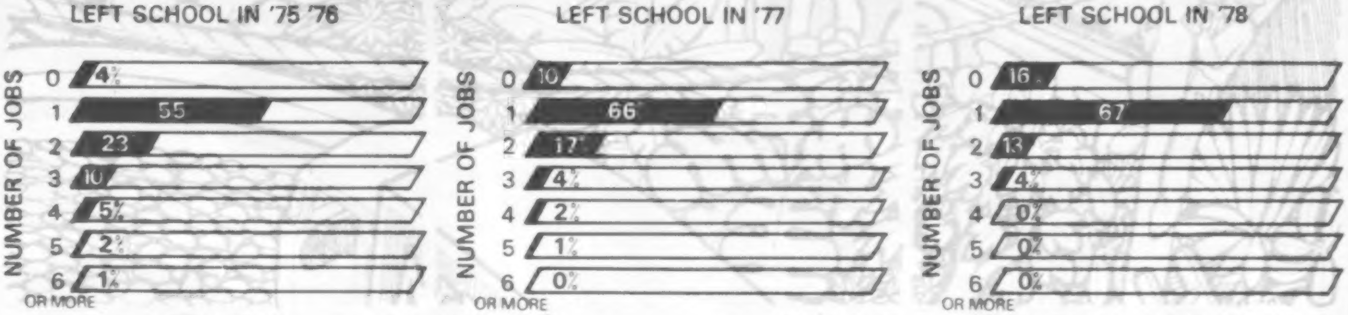
WHAT WAS IT LIKE ?

WAS IT THE KIND OF JOB YOU WANTED?

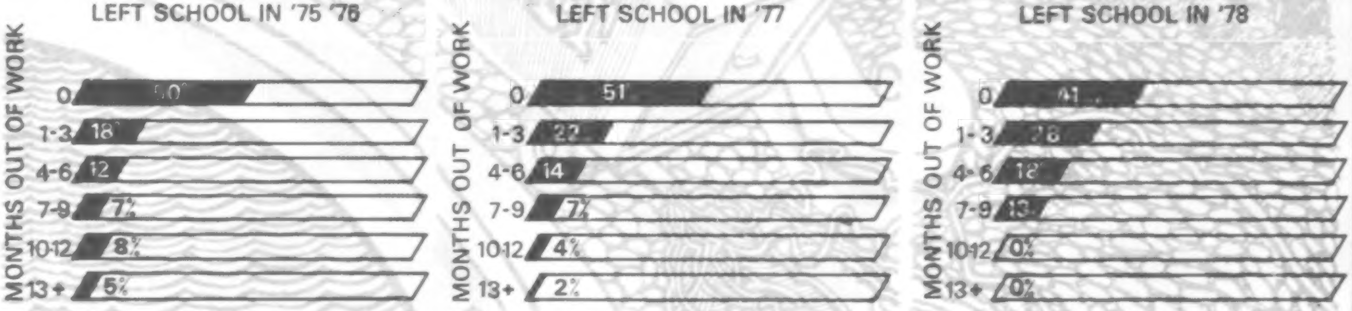
FURTHER STUDY ?

TYPE OF COURSE

LOOKING FOR THE RIGHT JOB



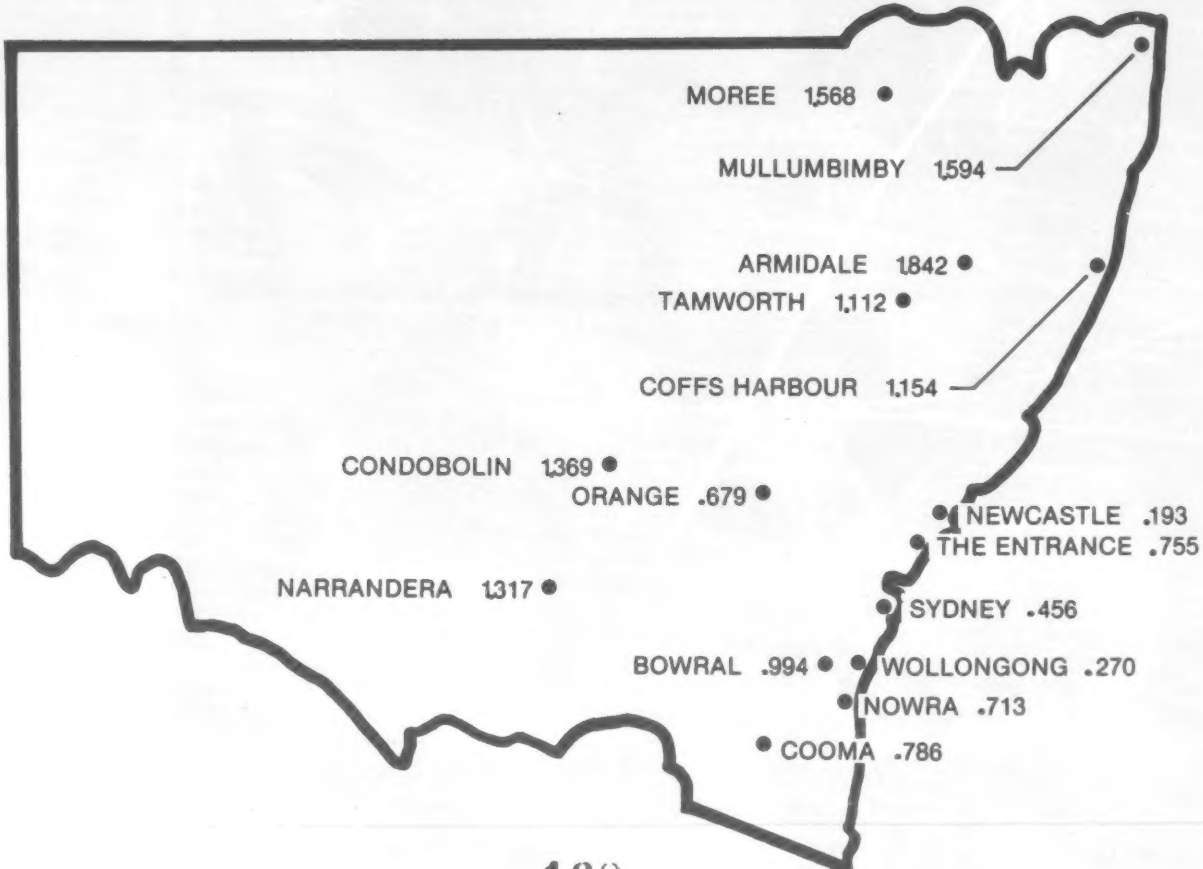
THE TIME IT TOOK

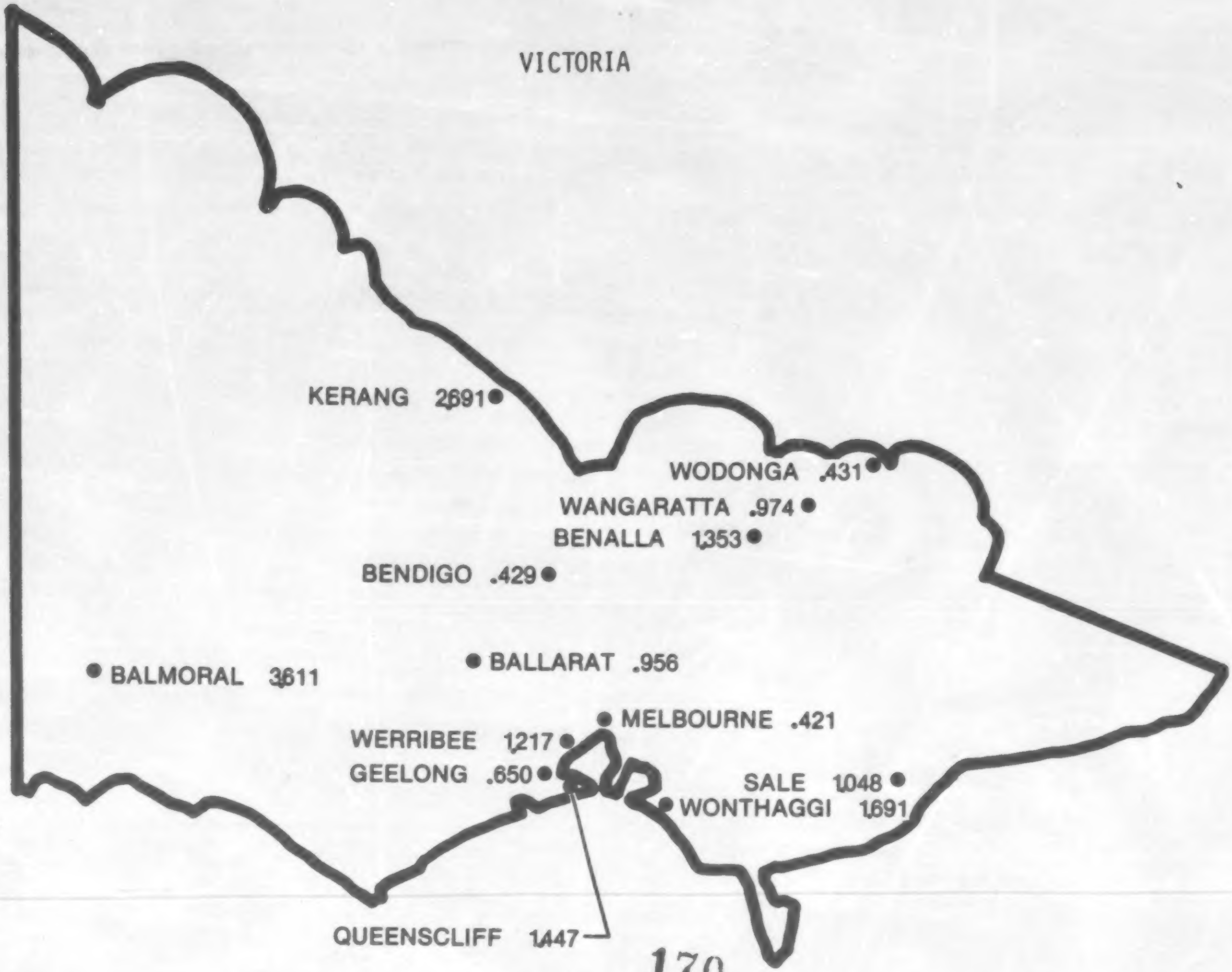


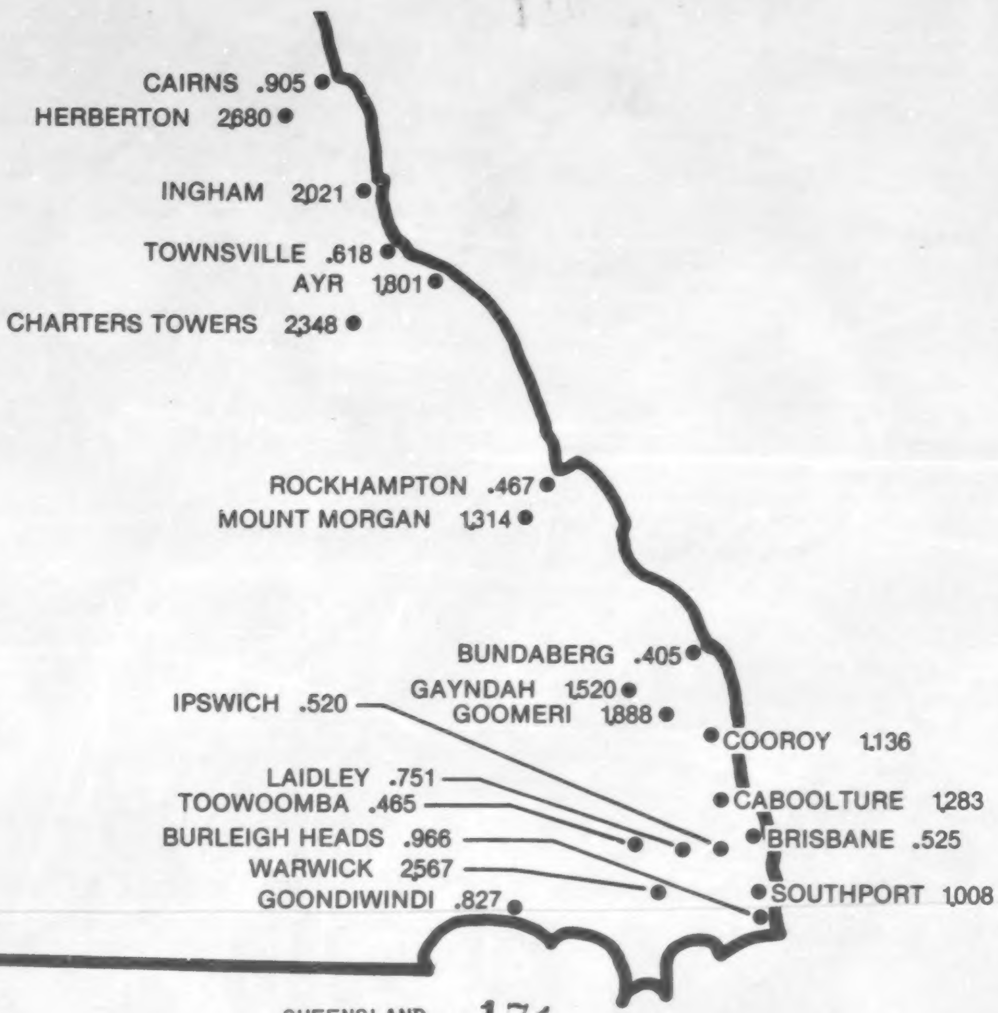
APPENDIX E

RURALITY SCORES FOR SCHOOLS IN SIX STATES

NEW SOUTH WALES

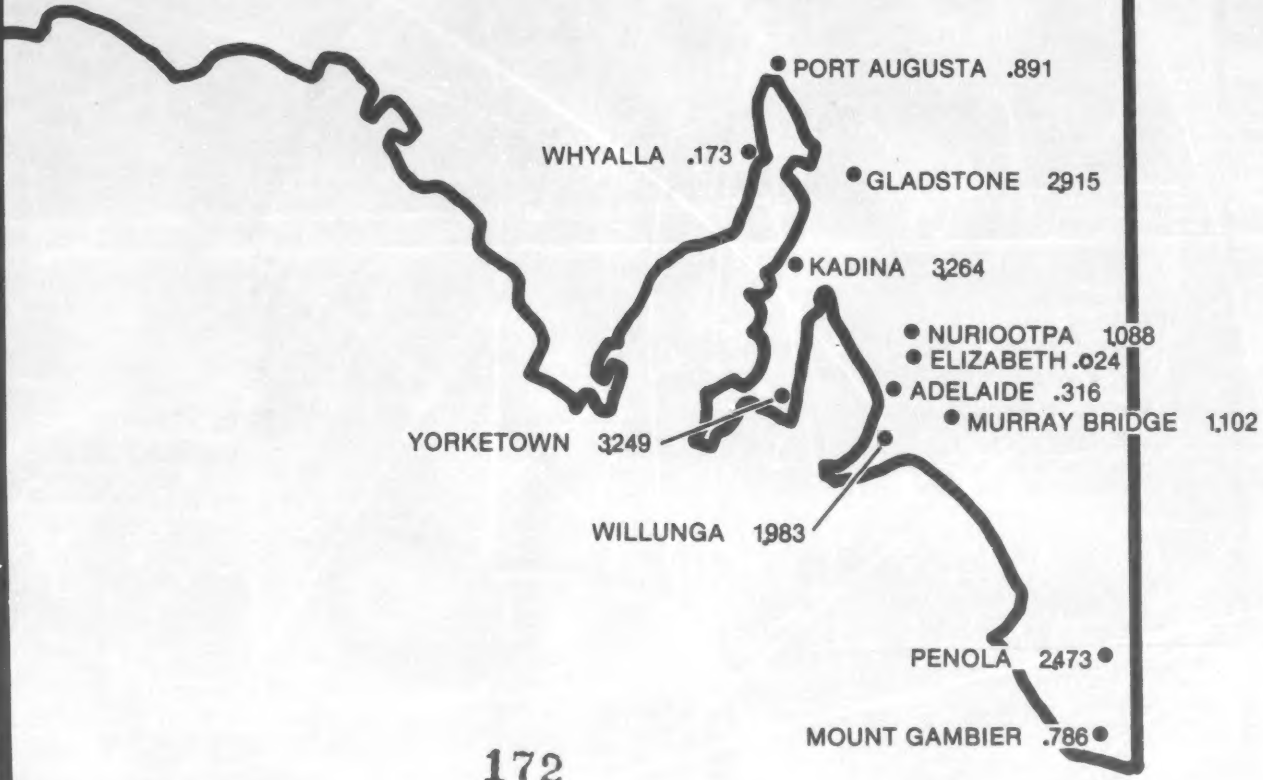

MOREE 1.568
MULLUMBIMBY 1.594
ARMIDALE 1.842
TAMWORTH 1.112
COFFS HARBOUR 1.154
CONDOBOLIN 1.369
ORANGE .679
NEWCASTLE .193
THE ENTRANCE .755
NARRANDERA 1.317
SYDNEY .456
BOWRAL .994
WOLLONGONG .270
NOWRA .713
COOMA .786

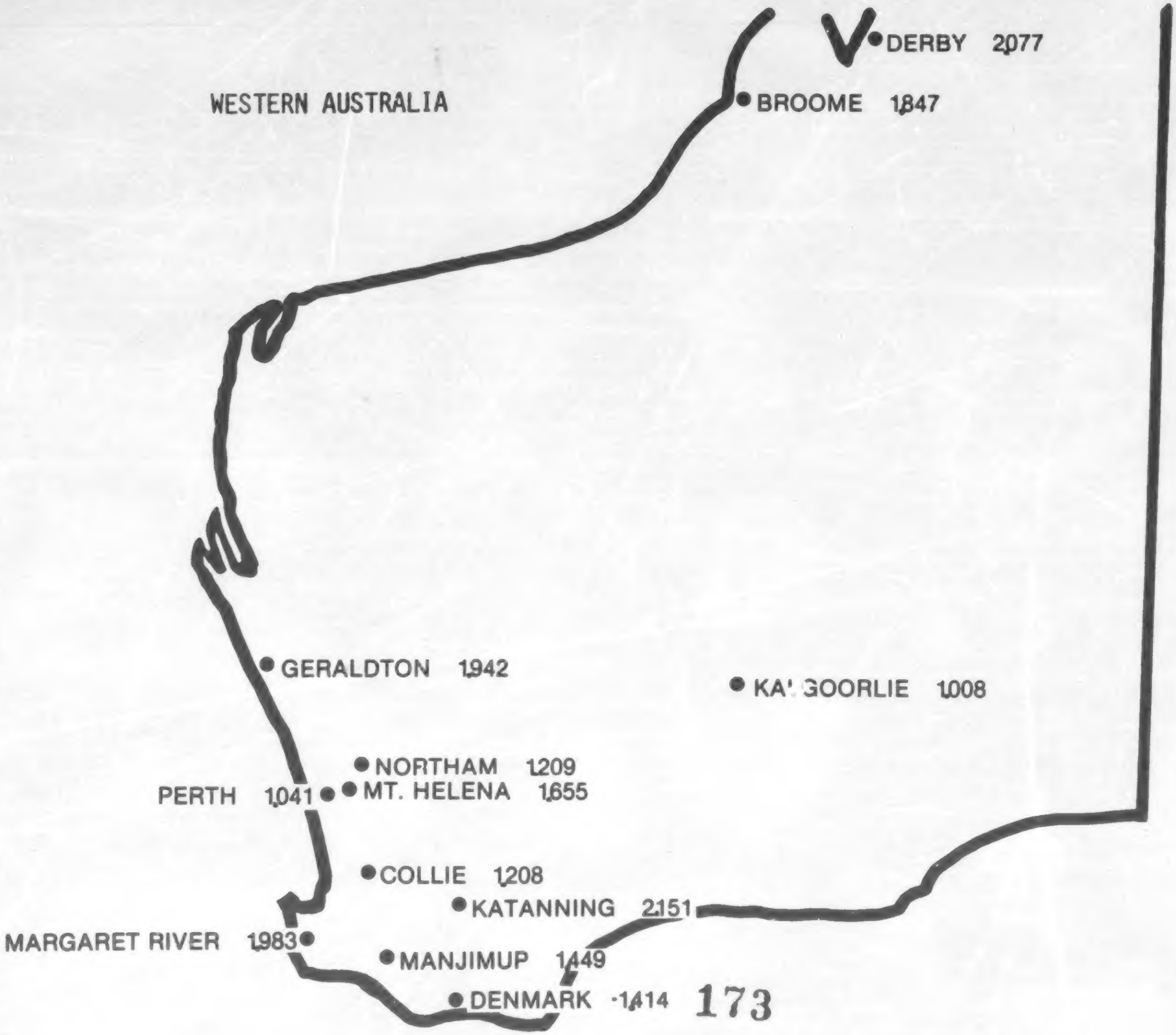

VICTORIA
KERANG 2.691
WODONGA .431
WANGARATTA .974
BENALLA 1.353
BENDIGO .429
BALLARAT .956
BALMORAL 3.611
MELBOURNE .421
WERRIBEE 1.217
GEELONG .650
SALE 1.048
WONTHAGGI 1.691
QUEENSCLIFF 1.447

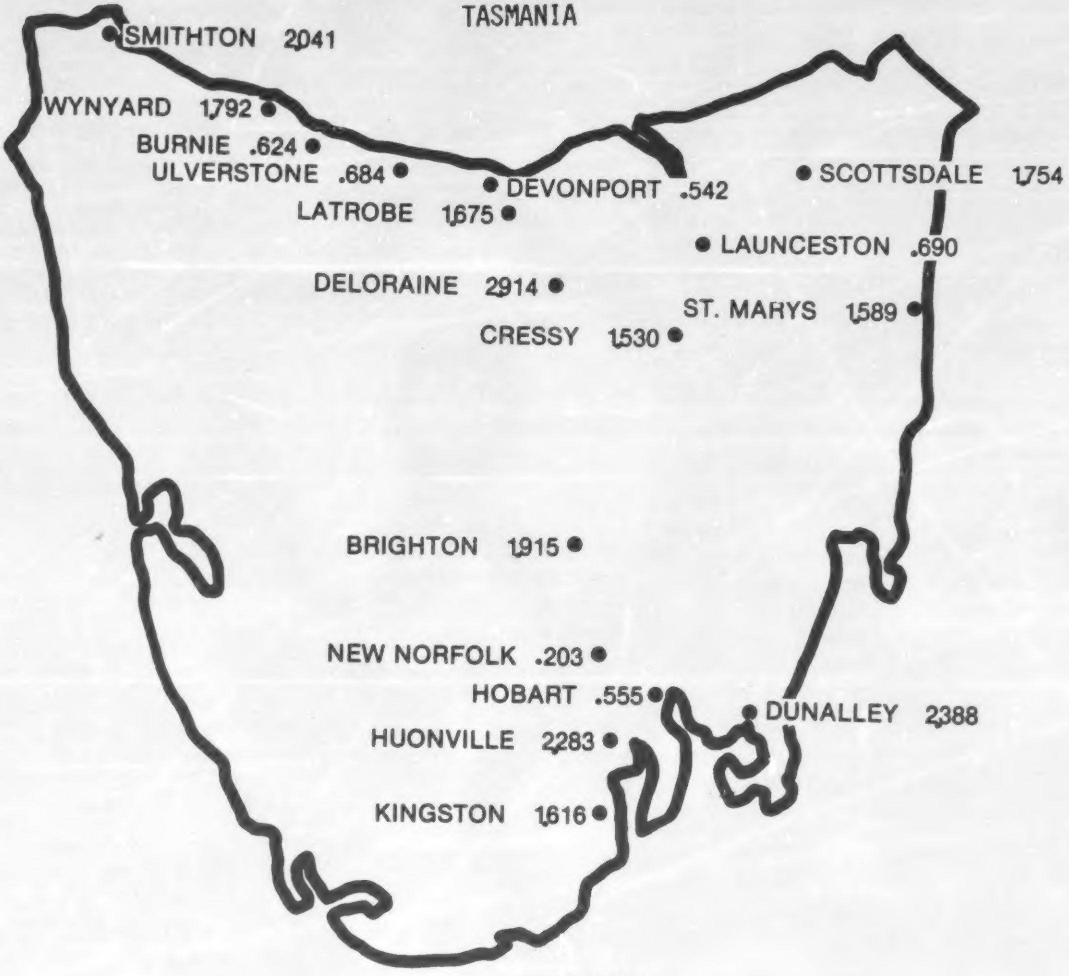

CAIRNS .905
HERBERTON 2,680
INGHAM 2,021
TOWNSVILLE .618
AYR 1,801
CHARTERS TOWERS 2,348
ROCKHAMPTON .467
MOUNT MORGAN 1,314
BUNDABERG .405
GAYNDAH 1,520
IPSWICH .520
GOOMERI 1,888
COOROY 1,136
LAIDLEY .751
TOOWOOMBA .465
CABOOLTURE 1,283
BURLEIGH HEADS .966
BRISBANE .525
WARWICK 2,567
SOUTHPORT 1,008
GOONDIWINDI .827

QUEENSLAND

SOUTH AUSTRALIA


PORT AUGUSTA .891
WHYALLA .173
GLADSTONE 2.915
KADINA 3.264
NURIOOTPA 1.088
ELIZABETH .024
ADELAIDE .316
MURRAY BRIDGE 1.102
YORKETOWN 3.249
WILLUNGA 1.983
PENOLA 2.473
MOUNT GAMBIER .786


WESTERN AUSTRALIA
DERBY 2,077
BROOME 1,847
GERALDTON 1,942
KALGOORLIE 1,008
NORTHAM 1,209
PERTH 1,041
MT. HELENA 1,655
COLLIE 1,208
KATANNING 2,151
MARGARET RIVER 1,983
MANJIMUP 1,449
DENMARK 1,414


TASMANIA
SMITHTON 2.041
WYNYARD 1.792
BURNIE .624
ULVERSTONE .684
DEVONPORT .542
LATROBE 1.675
SCOTTSDALE 1.754
LAUNCESTON .690
DELORAINE 2.914
ST. MARYS 1.589
CRESSY 1.530
BRIGHTON 1.915
NEW NORFOLK .203
HOBART .555
DUNALLEY 2.388
HUONVILLE 2.283
KINGSTON 1.616